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SUMMARY OF RECORDS OF SURFACE WATERS AT BASE STATIONS IN COLORADO RIVER BASIN 1891–1938

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By W. E. Dickinson

INTRODUCTION

Collection by the Geological Survey of records of stream flow in the Colorado River Basin was begun in August 1889, when three gaging stations were established in Arizona, on the Gila, Salt, and Verde Rivers. In 1894-95 the work was extended to include 15 gaging stations, on tributary streams at points in the basin where irrigation development was most intensive, and by 1910 the number had increased to 109. In 1938 there were 262 gaging stations, located to advantage throughout the basin.

The earliest known records of discharge in the Colorado River Basin were individual measurements of the main river, made by engineers of the United States Army,[1] at Stone's Ferry near Boulder Canyon August 12, 1875, at Camp Mohave September 2, 1875, and at Fort Yuma March 20, 1876. In the summer of 1876, the Southern Pacific Co. established a gage near the railroad bridge over Colorado River at Yuma, and daily gage readings at that point, now available, are continuous since January 1, 1878.

Modern irrigation, using surface waters diverted from various streams in the basin, was begun many years before the first continuous records of discharge had been obtained. As developments for irrigation and other purposes increased in size and number, became more systematized, and required greater knowledge of water supply, the collection of records of stream flow was substantially augmented through the assistance of many interested parties and agencies, both private and public.

During the 50-year period 1889 to 1938, records of stream flow in the Colorado River Basin have been collected for various lengths of time at approximately 500 gaging stations, making a total of about 5,000 years of records. These records have been published in 80 or more separate volumes by the Geological Survey, and in many publications issued by the several States in the basin. As most annual gaging-station records are published soon after their collection, it has frequently occurred that additional data, later obtained, and more comprehensive analyses have resulted in revisions which, of necessity, have appeared from time to time, only in later publications, and thus have been obscured to some extent. Additional estimates of discharge have been prepared for various periods, mostly for winter months when gaging operations had been interrupted and information was not so complete, and many of them published at different times. Some records not previously published and some previously published only in reports of the States or other agencies are here presented for the first time in a publication of the Geological Survey. The sources of such records are given in the descriptions of the individual stations and in the bibliography. In the preparation of this paper some further additions, estimates, revisions, and corrections have been found appropriate and have been included in the records presented.

1 U. S. Geol. Survey, 12th Ann. Rept., pt. 2, pp. 291-292, 1891.

In past years several comprehensive reports have been published relative to the utilization of the water resources of the Colorado River Basin, prepared on the basis of the information then available. The factor most important to utilization was, of course, the surface-water supply, as indicated by the gaging-station records thus far collected, and summaries of such records as were then available were made essential parts of these reports. In this review, full consideration has been given to the records thus presented and to the conclusions drawn from them. The principal reports thus used, all of them water-supply papers, bear the following numbers and titles: 395, Colorado River and its utilization (containing records to 1914); 556, Water power and flood control of Colorado River below Green River, Utah (containing records to 1923); 617, Upper Colorado River and its utilization (containing records to 1927); and 618, The Green River and its utilization, (containing records to 1926).

Purpose and scope of report

This report presents summaries of records of discharge at a series of key points in the Colorado River Basin termed "base stations". When taken together and arranged in progressive downstream order as shown on plate 1, they show, simply and completely, the water supply of the main stem of the Colorado River, the contribution of each principal tributary to the main stem, the amounts of the principal diversions from it (where necessary, in order to show the effect of the diversion on the flow in the main stem), and, by comparison with records of adjacent base stations, the gains or losses in consecutive reaches of the river. Because of the practically equal prominence of the two upper arms of the main stream--Green River and Colorado River above Green River--similar treatment has been given to each.

For greater convenience in using them, all the records have been recomputed on a uniform basis in accordance with present standards of refinement. Full data of yearly discharge are given for both the water year ending September 30 and the calendar year. In addition to the usual figures of maximum, minimum, and mean discharge in second-feet, and runoff in acre-feet, there are given monthly and yearly totals of second-foot-days, which, while primarily thought of as computation figures, will be found valuable for use as quantities of runoff in studies involving interchange of discharge and storage of water, such as routing floods or other flow through reservoirs or channels where temporary storage or gains or losses of water occur.

This report also contains a bibliography of all published records for the base stations.

The records show the actual discharge. No adjustments have been made for regulation by storage or for depletion by diversion, but some specific information on diversion and regulation is given. No attempt has been made to compute or estimate the discharge that would have occurred under original, natural conditions or the discharge that might have occurred under any assumed conditions of utilization of the waters.

This report contains the summary of available records of a group of gaging stations on the main Colorado River and its principal tributaries, generally the lowermost station on a tributary, selected with a view to the length and reliability of the records and their applicability in intercomparison of discharge in different parts of the Colorado River Basin. They are the base stations, so-called. It is hoped that ultimately similar summaries may be prepared for records of certain geographical subdivisions of the basin.

Cooperation and acknowledgments

The work incident to the collection of the data and the preparation of the records for original publication has been carried on for many years in cooperation with the engineering agencies of the several States of the Colorado River Basin. Cooperation has also been furnished in that work by other bureaus of the Federal Government, by various political subdivisions of the States, and by power companies, water users' associations, and other interested parties. Financial cooperation has had appropriate acknowledgment in the original publications and is not repeated here. Cooperation consisting of records furnished, and of technical assistance in the collection of base data, are acknowledged in connection with the description of each station affected.

In the preparation of this summary, assistance was furnished by the district engineers of the Geological Survey having jurisdiction over the stream-gaging work in the Denver, Salt Lake City, and Tucson districts which include parts of the Colorado River Basin. Valuable suggestions were also furnished by them and by others of the personnel of the water-resources branch of the Survey. Special acknowledgment is made of the very helpful assistance of W. S. Eisenlohr, Jr., on many details of the work and of R. W. Davenport, chief of the division of water utilization, under whose direction this summary was prepared.

DESCRIPTION OF THE BASIN

The Colorado River rises in Rocky Mountain National Park, about 65 miles northwest of Denver, at an altitude of more than 10,000 feet above sea level. It flows in a general southwesterly direction for about 450 miles to its junction with the Green River, at altitude of 3,876 feet above mean sea level, in southeastern Utah. Green River has its source in a region of high mountain lakes in the Wind River Mountains in western Wyoming. It flows generally south for 730 miles to join the Colorado River in a great desolate and barren region of high rocky plateaus and deep canyons that occupies parts of four States. (See pl. 2.) Below Green River, Colorado River continues through tortuous canyons for most of its generally southwestward course of approximately 1,000 miles to its indefinite mouth in the delta region at the head of the Gulf of California.

The Colorado River Basin occupies a region roughly 800 miles long and from 300 to 500 miles wide, comprising parts of seven States in the United States, and of two States in Mexico--Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming in the United States, and Baja California and Sonora in Mexico. The river system drains the western slope of the Continental Divide from the vicinity of Yellowstone Park on the north nearly to the Mexican border on the south. Adjoining this basin on the west, from Wyoming practically to the Gulf of California, lies that series of many closed interior basins known collectively as the Great Basin, which includes the basin of Great Salt Lake.

Unique among these interior basins is the basin of the Salton Sea, which in the more remote past was literally a part of the Colorado River drainage basin and within the period covered by this report received for a time a large part or all of the natural flow of the Colorado River. Since 1907, Colorado River has been prevented from entering the Salton Sea Basin and forced, by the building of extensive levees in the delta region, to continue its course to the Gulf of California.

The area of the drainage basin of the Colorado River, not including the Salton Sea Basin, is 246,000 square miles. The area above the delta region is about 243,000 square

miles, of which all but 1,150 square miles--on the headwaters of the San Pedro and Santa Cruz Rivers, in the Gila River Basin--is within the United States. Because of the climate, the runoff from many hundreds of square miles rarely reaches the main stream courses. No closed basins adjacent to the actual drainage basin of the Colorado River are included in the measured area, but several small closed basins which lie wholly within the area drained are included.

Above the point on the Colorado River that is designated in the Colorado River Compact as "Lee Ferry" and described as "1 mile below the mouth of the Paria River", the drainage area of the upper basin is 109,500 square miles, or 45 percent of the entire drainage area of the Colorado River Basin. In contrast, the average runoff at "Lee Ferry" during the 32-year period 1903-34 was about 94 percent of the runoff past Yuma, Ariz. The area of the drainage basin of the Colorado River above the Green River is 26,200 square miles (revised figure), or only 59 percent of the area of the Green River Basin, which is 44,500 square miles (revised figure); but during the 44-year period 1895-1938, the Colorado River above the Green River has delivered at their junction 26 percent more water than Green River and during that period has contributed 46 percent of the water passing "Lee Ferry".

The entire Colorado River Basin is properly included in the "great arid region of the West", and much of it is reasonably included in the so-called Great American Desert. The average annual precipitation in the basin ranges from less than 3 inches, in the delta region, to more than 50 inches, in parts of the Rocky Mountains. In general over the basin, the precipitation increases with the altitude, but relatively greater precipitation occurs on the mountain areas more exposed to the prevailing westerly approach of storms. Wherever agriculture is successfully practiced in the basin, irrigation is required, even in the mountain valleys on the headwaters. The average annual precipitation exceeds 15 inches on very few of the arable lands of the basin, and on arable lands of any considerable area it is generally less than 10 inches. It is scarcely 5 inches on the greater irrigable areas of the lower basin.

Temperatures, of course, vary greatly with the altitude and latitude, and because of the predominantly clear weather and low humidity there is a very considerable diurnal variation. Maximum temperatures of well over 100 degrees occur for many consecutive days in summer in the region of the lower Colorado River, and minimum temperatures well under zero occur in the upper basin for less extended periods in winter. Summer temperatures in excess of 100 degrees are common throughout the basin except in the higher mountain areas. In general, the diurnal range of temperature in summer in most parts of the basin may be said to average 30 or 40 degrees, but in winter the average is somewhat less in the upper basin and somewhat greater in the lower basin.

Uniformity of climatic conditions from day to day and week to week is an outstanding characteristic of the Colorado River Basin in general. The summers of most of the agricultural areas are relatively hot and dry but mostly free from climatic conditions destructive to crops if sufficient irrigation water is available. In winter, the sunny climate of the open valleys of the lower basin is conducive to the production, by means of irrigation, of vast quantities of seasonal fruits and vegetables. Large areas in the region of the lower river are practically free from any damaging frost, and the growing season is relatively long in all areas of the basin that have been extensively developed for agriculture; but in some of the higher mountain valleys the interval between the killing frosts of late spring and early fall may be less than a month.

The main Colorado River, like many of its tributaries both large and small, is divided naturally by topography and climate into three distinct parts, as is commonly true of streams in the arid region. These parts are the upper contributing area, in which the stream flow is progressively built up; the intermediate canyon section, in which there is considerable fall but little change in quantity of flow; and the lower flatter reaches, where large losses of surface flow occur from natural seepage and evaporation. The runoff of greatest intensity in the basin comes from the mountain regions of western Colorado, particularly from the area above the junction of Roaring Fork and Colorado River at Glenwood Springs; and the greatest natural losses of water (except by evaporation and seepage from reservoirs) occur in the lower reaches of the main river and the larger tributaries, notably in Colorado River below Bulls Head and in lower Gila River.

The great canyon region of the basin extends in general from Flaming Gorge on the Green River in Utah near the Wyoming line, from the vicinity of the Cisco gaging station on the upper Colorado River, and from Shiprock on the San Juan River in New Mexico down to Bulls Head Rock on the lower Colorado River, 25 miles north of Needles, Calif. It reaches its climax in the Grand Canyon, in Arizona. On the main stem of the Colorado and these two arms, there are within this region more than 1,500 miles of major canyons. Within this area also, the rivers fall from an elevation of about 4,000 feet above sea level to 500 feet. In the reach of the Green River from Green River, Wyo., above Flaming Gorge, to Green River, Utah, the fall is 2,000 feet. Although the canyon regions are remote, they contain many excellent sites at which hydroelectric power can be developed when the demand requires; and there are suitable reservoir sites, favorably located below much of the greater water-producing area but upstream from the reaches of river where the fall is great.

The flow of the Colorado River and its tributaries that rise in the higher mountain regions is characterized by relatively heavy spring runoff, from March or April to June or July, resulting from the melting of the accumulated winter snow, and by a long-continued season of low flow, generally interrupted by flash floods of considerable intensity but of short duration, which result from summer and fall thunderstorms, often of violent intensity over small areas. Such storms are more prevalent and more violent in the hotter mountainous regions of the lower basin. In occasional years, greater and more seriously destructive flash floods, principally in the streams of the lower basin, have resulted from intense rains over larger areas and of longer duration, occurring within the period of September to March and largely restricted to September, January, or February. In many local basins, the maximum discharge of record has occurred during this type of runoff.

The greatest floods in the canyon section of the Colorado River of which there is any knowledge have occurred in the late spring or early summer as the result of unusually heavy snowfall over the mountain areas of the upper basin during the preceding winter. Owing to the nature of their origin, such floods have been characterized not only by higher peak discharge but also by longer duration of high discharge and, consequently, by a much greater total runoff during the flood period.

Data on exceptionally great spring floods are meager, but three such floods are noteworthy. A flood-crest discharge of 220,000 second-feet at the Lees Ferry and Grand Canyon gaging stations was computed for the flood of June 1921. The crest of that flood wave passed the Lees Ferry station June 18, the Grand Canyon station June 19, and the Topock station June 22 and reached Yuma June 28. The crest discharge probably was little reduced

as it passed through the canyons above Topock but considerably reduced as it traversed the long open valleys above Yuma. A flood-crest discharge of about 300,000 second-feet on or about July 7, 1884, has been determined from a well-established high-water mark on the Paria Ranch at Lees Ferry. The crest stage of that flood wave was recorded July 4, 1884, at Fruita, Colo., and the corresponding peak discharge at Yuma is believed to have occurred about July 14. An earlier and higher flood wave, most likely occurring in June and July, 1862, was indicated by high-water marks found at the site of the Red Rock (Topock) Bridge, which was constructed in 1889-90. (See p. 201.) The maximum discharge of that flood has been estimated as in excess of 400,000 second-feet. Competent authorities have given credence to hearsay evidence of a possible flood flow at some early date of as much as 500,000 second-feet in the canyon section of the Colorado River.[2]

Notable flash floods in tributary streams in the Colorado River Basin occurred in lower San Juan River in October 1911 and September 1927; in Little Colorado River in September 1923; in Virgin River and Meadow Valley Wash in March 1938; in Williams River in February 1891, January 1916, February 1927, and February 1937. Numerous floods of this character have occurred in many tributaries of Gila River, notably in San Pedro River in September 1926. Local flash-flood runoff, unprecedented in the period of records within which such runoff could be identified, occurred in the valley of the Colorado River below Boulder Dam in September 1939.

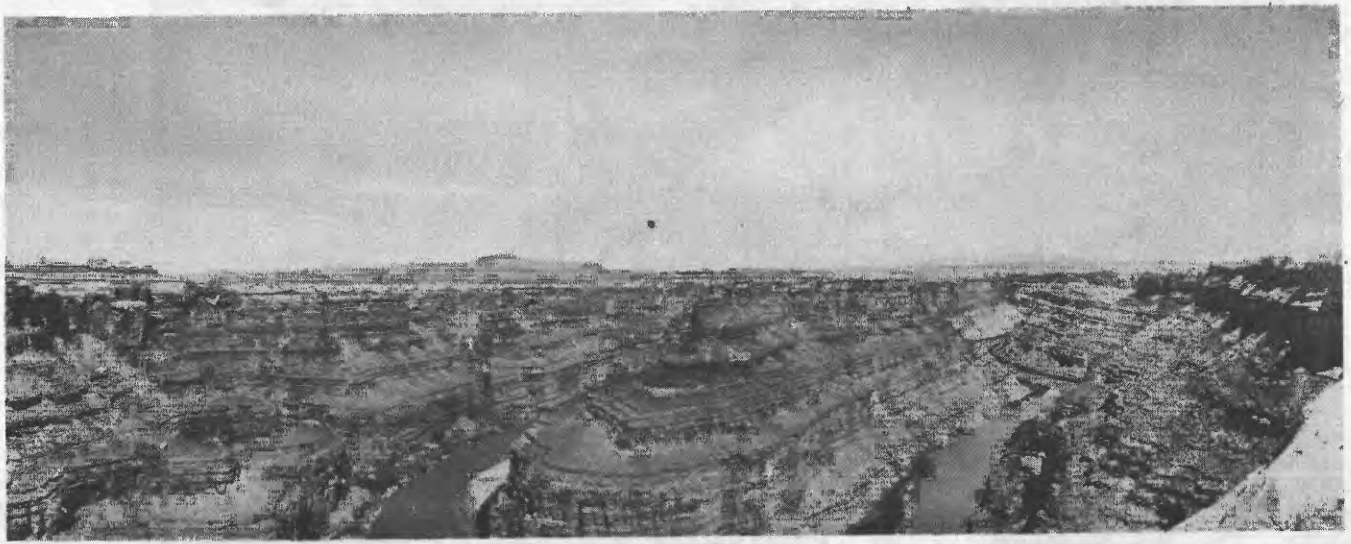
Great floods throughout the Gila River Basin in the winter of 1891, with the highest discharge in February, caused major flood conditions in the Colorado River at and below Yuma. Floods in Gila River in January 1916, of perhaps about the same maximum discharge as occurred in 1891 but probably of less duration, caused the maximum discharge of the Colorado River at Yuma known since the actual recording of discharge there began in 1902. Gila River floods of considerable magnituds had a spectacular effect on the lower Colorado River in 1905 and 1906, when the Colorado broke into the Imperial Valley.

The minimum discharge known to have occurred in the Canyon section of the Colorado River was 700 second-feet at the Grand Canyon station Dec. 28, 1924, as the result of a period of unusually cold weather; the minimum daily mean discharge was 990 second-feet on the same day. The minimum daily discharge past Yuma of which there is any record was 215 second-feet Aug. 26, 1934, but there is hearsay that for a considerable period in a summer about 1860, the river in the vicinity of Yuma was actually dry, and that was before there were appreciable diversions of water for irrigation in the basin above.

Throughout a vast part of the plateau regions and regions of lower altitude, the smaller stream courses are normally dry except during periods of considerable rain, and many of the larger stream courses carry almost no flow except as the immediate result of storms. Many bountiful streams of water issuing from mountain canyons soon sink beneath dry stream beds unless sooner diverted for irrigation.

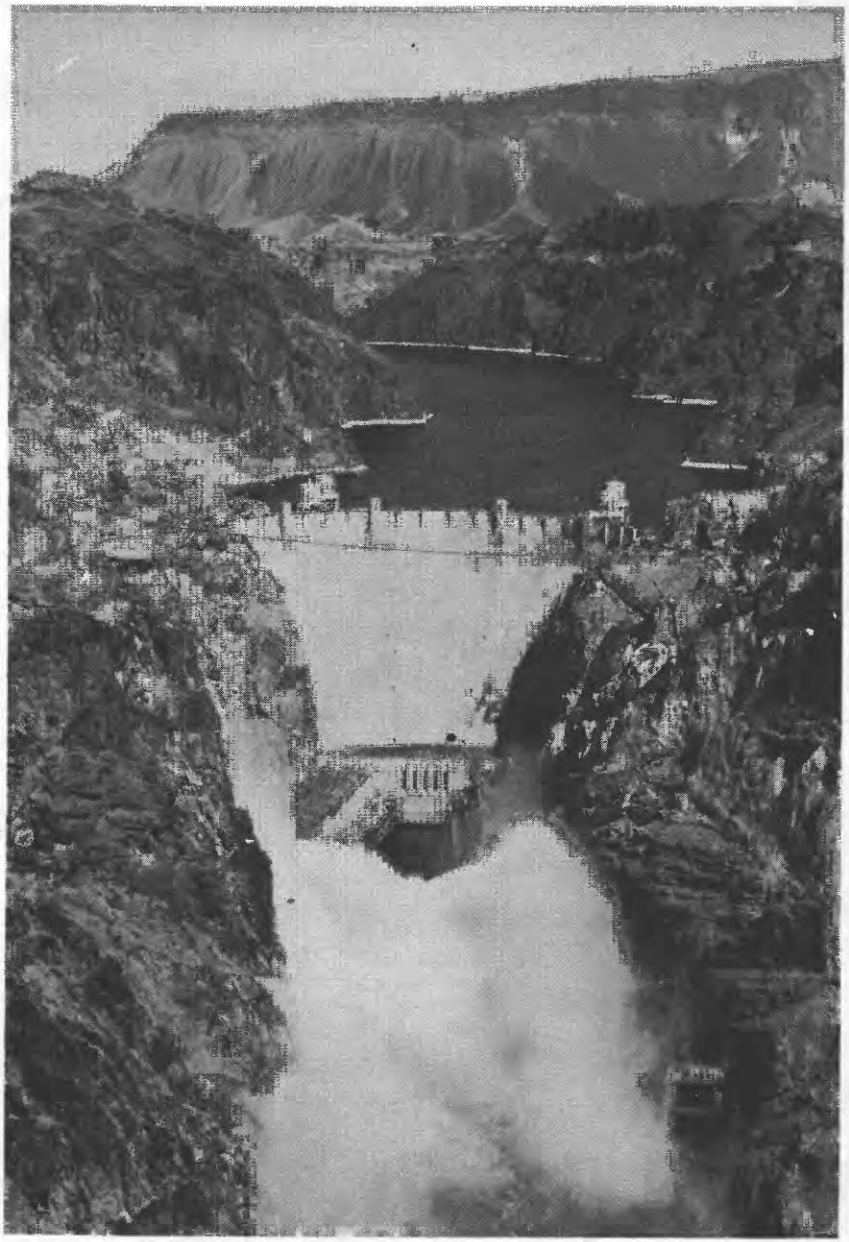
By the end of 1938, utilization of the waters of the Gila River Basin had stopped its contribution of runoff to the Colorado River except for remnants of occasional flood flow. Even prior to such utilization the great reaches of lower Gila River carried little or no flow for long periods during most years. However, regardless of regulation, there probably remains the possibility of great flood flow in lower Gila River in exceptionally wet years.

2 Report of the Colorado River Board on the Boulder Dam project, 70th Cong., 2d sess., H. Doc. 446, p. 5, 1928.



PANORAMIC VIEW FROM RIM OF CANYON 1 MILE UPSTREAM FROM MOUTH OF GREEN RIVER.

Colorado River is at extreme right. Photograph by E. C. LaRue.



BOULDER DAM AND LAKE MEAD, ARIZ.-NEV.

Photograph by Bureau of Reclamation.

The fair-weather flow of a few second-feet in Williams River is perennial through the canyons, and continues beneath the surface in the more open reaches. The Little Colorado River ceases to flow at the Grand Falls station for at least brief periods each year, but it is said to receive considerable inflow from large perennial springs deep in its narrow box canyon as it descends into the Grand Canyon of the Colorado River. The exposed bedrock channel of San Juan River near the Bluff station was dry July 3-13, 1934, but this is the only time when that condition has ever been reported.

The natural seasonal distribution of the runoff in the basin is favorable to the use of a considerable part of the whole water supply for irrigation without artificial regulation, and great agricultural development has been accomplished on that basis. Much added development, with more complete use of the supply, greater assurance of sufficient water when needed, and protection from floods, has been accomplished by the use of storage reservoirs in some parts of the basin. And much is yet to be accomplished before the maximum use of the water supply of the whole Colorado River Basin will be realized.

With the construction of Boulder Dam (see pl. 3), there has been made possible the complete regulation of the water supply practicable of use for irrigation by diversion from the lower Colorado River. Power development and flood control are also important functions of that great structure. Much development of similar character but of lesser magnitude has been accomplished in the Gila River Basin, particularly on the Salt River (see pl. 4,A), and on a number of the higher tributary streams throughout the basin of the Colorado River. For the best use of the water, some headway has been made in diversion from one smaller basin to another within a greater basin, notably within the basin of the Gunnison River, and from the Colorado River Basin to many of the adjacent basins through so-called trans-mountain diversions. Much more development of this kind is under construction or definitely planned, and still more awaits greater need or more favorable conditions for accomplishment. Notable are the diversions of water, for municipal supply, from the main basin to Denver through the pioneer bore of ths Moffat tunnel and to Los Angeles through the Colorado River Aqueduct. Of special note also is the Colorado-Big Thompson project, a feature of which is a tunnel that is being bored through the mountain, deep under Rocky Mountain National Park, to carry water from Grand Lake to the basin of South Platte River for irrigation and power. (See pl. 4,B.)

Although irrigation has thus far provided the greatest and most widespread use of the waters of the basin, development of hydroelectric power has accompanied release of water from all the larger reservoirs used for storage and regulation of flow for irrigation. Flood control of great importance is accomplished by means of the storage reservoirs in the basin, but for most of them flood control is merely incidental to their primary function of storing water for irrigation and power. Lake Mead is the only reservoir in the basin where a part of the capacity is specifically reserved for storage of flood waters and their most appropriate release for purposes of flood control regardless of power and irrigation requirements.

If at any time the release of stored water for power development exceeds irrigation requirements, reregulation is necessary to prevent actual waste of water. When the total water supply that is practicable of control is a limiting factor in either power or irrigation use, the release of stored water for flood control reduces the maximum possible use of the supply for power and irrigation. Such considerations and many conditions affecting them present problems that cannot be correctly solved without a complete knowledge of comprehensive records of the flow and storage of the water.

DEFINITION OF TERMS

Stream-gaging terms as used in this report may be defined as follows:

"Gage height" is the elevation of the water surface above the arbitrary datum or zero of the gage. It may be obtained directly by reading the elevation of the water surface on the graduated scale of a staff gage or by measuring down from a fixed point with a chain or wire-weight gage; or it may be obtained indirectly from the scale of a water-stage recorder graph. Gage heights are usually expressed in feet and hundredths of a foot.

"Discharge" signifies the rate of flow of a stream past a given point, such as a gaging station, and also, the total volume of such flow.

"Stage-discharge relation" is the relation between gage height and discharge, as defined by discharge measurements by which it is possible to obtain the discharge of a stream from the observed gage heights.

"Control" is a term used to designate a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural section, a reach of the channel, or an artificial structure.

"Runoff" is the volume of flow of a stream, as from a drainage area during a given period of time, and also, the water that reaches the stream courses from their drainage basins.

The units in which stream-flow data are expressed in this report are defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second". A second-foot is the rate of flow equivalent to that of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

"Second-foot-day" is the volume of water represented by a flow of 1 second-foot for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

An "acre-foot" is the quantity of water required to cover 1 acre to the depth of 1 foot and is equivalent to 43,560 cubic feet. The term is commonly used in connection with storage for irrigation.

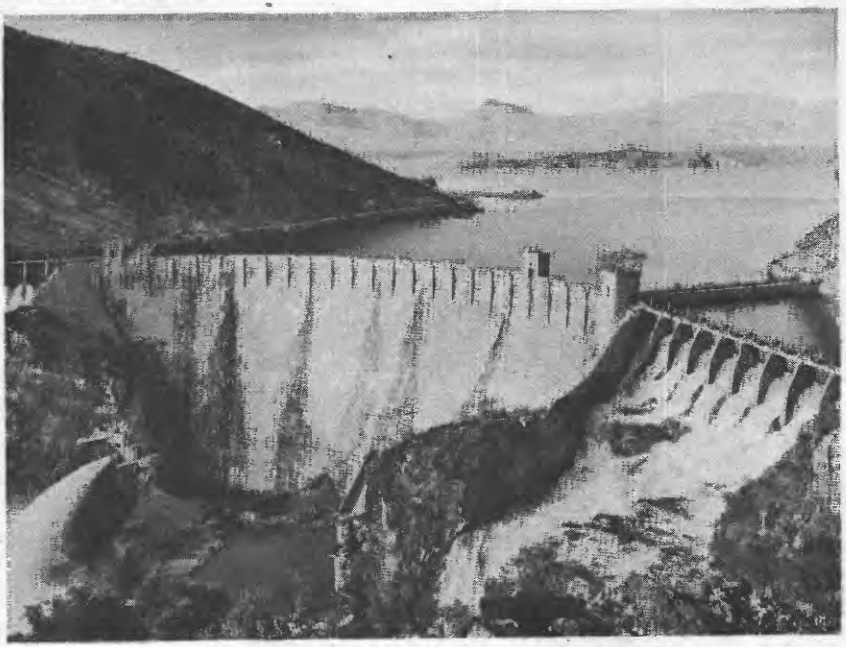
"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the runoff is distributed uniformly in regard to both time and area.

"Runoff in inches" is the depth to which an area would be covered if all the water draining from it in a given period were uniformly distributed on its surface. It is used for comparing runoff with rainfall, which is usually expressed in inches.

ACCURACY OF RECORDS

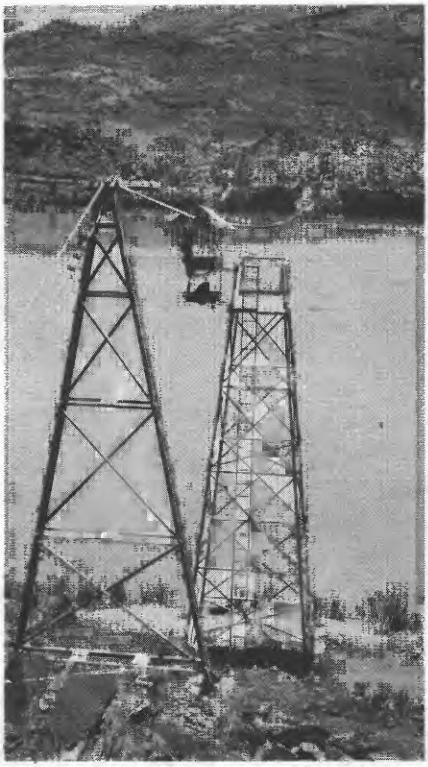
The accuracy of stream-flow records in general depends on the accuracy of the determination of stage, the accuracy of the measurements of discharge, the permanence of the stage-discharge relation, and the interpretation of the base data. For the many gaging stations at which the stage-discharge relation is not permanent, the frequency of discharge measurements is also an important factor.

The station description gives a statement in regard to the accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent.

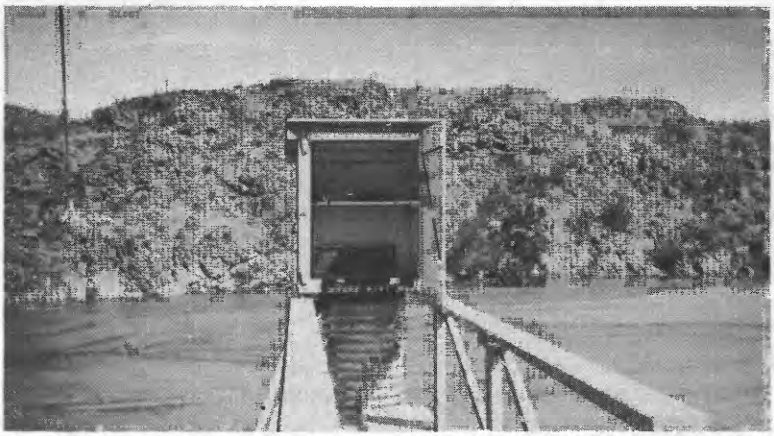


A. ROOSEVELT DAM ON SALT RIVER.
Photograph by Bureau of Reclamation.

B. START OF COLORADO-BIG THOMPSON PROJECT.
Nearly completed canal at entrance to west portal of Continental Divide Tunnel. Grand Lake, Colo., is just visible through trees in background. Photograph by Bureau of Reclamation.



A. MEASURING CABLEWAY ON COLORADO RIVER AT LEES FERRY, ARIZ.
Note landing tower. Photograph by J. A. Baumgartner.



B. WATER-STAGE RECORDER ON WILLIAMS RIVER AT PLANET, ARIZ.
Note cableway at upper left. Photograph by W. S. Eisenlohr.

GAGING-STATION STRUCTURES.

There is a tendency to use these same expressions to indicate the probable percentages of accuracy of estimates of monthly mean discharge. Monthly mean discharge computed from daily discharge may generally be considered as of somewhat higher accuracy than daily discharge, and yearly mean discharge may similarly be considered more accurate than monthly discharge.

Figures of "second-feet per square mile" and "runoff in inches" are rarely included in records of stream flow in the Colorado River Basin, and any such figures that may be computed from the data shown should be used with caution. The rainfall on most of the basin is too little to produce consistent runoff, and therefore large noncontributing districts are included in many of the measured drainage areas. Also, the effect on the flow of regulation by storage in reservoirs and of depletion by diversion for irrigation must be considered.

EXPLANATION OF DATA

The data presented in this report have been arranged primarily by water years. The water year extends from October 1 to September 30 and is designated in this report by the calendar year in which it ends. The information is also given by calendar years for the convenience of those who prefer such an arrangement.

The base data collected at gaging stations consist, primarily, of records of stage and measurements of discharge. Records of stage, or gage heights, are obtained either from water-stage recorders (see pl. 5,B) or from direct readings on nonrecording gages, such as staff, chain, or wire-weight gages. Measurements of discharge are made with a current meter by use of equipment and methods developed by the Geological Survey through many years of experience. (See pl. 5,A.)

Rating tables for each gaging station, indicating the discharge at any gage height, are prepared from rating curves that are developed from the discharge measurements and that show graphically the relation between gage height and discharge. Owing to continually changing river bed in many parts of the Colorado River Basin, the stage-discharge relation at many stations does not remain constant, but changes from day to day, or more or less rapidly. To a large extent the change is of the nature of vertical shifting, which condition permits the use of rating tables based on rating curves which are of normal permanence as to shape.

Daily discharge is obtained by applying daily mean gage heights to the rating tables. The application may be made directly if the stage-discharge relation has remained constant; or by use of adjustments to gage heights determined from frequent discharge measurements if this relation has shifted. For days having considerable range in stage or rapid fluctuation, the discharge is determined in like manner for parts of the day, and the daily mean discharge is computed therefrom; or the daily mean discharge is obtained directly from the gage-height graph by use of a discharge integrator, an instrument that contains as an essential element the mechanical counterpart of the rating curve for the gaging station.

Records of daily discharge are not given in this report, with the exception of some that have been revised and the revised figures not previously published. In the preparation of the monthly and yearly summaries presented in this volume, the base data and the original and subsequent analyses have been reviewed. Where such review has indicated it would be appropriate, the records have been revised. Revisions are shown and explained in

the station descriptions and tables and are indicated in the bibliography. In connection with this work, the development of stream gaging in the Colorado River Basin has been reviewed with particular attention to its effect upon the records. In a more general way, there have been observed and brought out in the descriptions the effects on the stream flow of natural conditions and of conditions resulting from developments for utilization of the waters.

An attempt has been made to discover and include all available records or reliable estimates of discharge at the base stations. Because of the greater value of complete continuity in the data, estimates have been made wherever practicable to supply omissions or fill gaps in the records. In some cases, comparable records at two or more points on a given reach of river have been combined to produce a longer or more complete record. Also, some related records have been combined to produce a record that could not be obtained by means of a single gaging station.

Station descriptions

The description of a gaging station gives its location by latitude and longitude as determined from the best available maps and by reference to the land lines of the surveys of the General Land Office. Its location is also given with reference to the nearest town and to any nearby prominent object on the stream. For determination of the reach of river to which the record applies, reference is also made to the nearest tributary or other feature affecting the discharge. The types of all gages, their precise locations, and the conditions of their operation during all periods of use are discussed. If more than one site or gage is involved, the latest site or gage is described first, after which the others are described in chronologic order.

In general, the drainage area given is the part of the stream basin that lies upstream from the latest location of the station. The average discharge is for the period of years indicated. A concise statement is made of the exact periods for which records have been published. Such records generally consist of discharge records or the information for obtaining them. Reports prior to 1914 include gage-height records, and those prior to 1927 include lists of discharge measurements. It may usually be assumed that such information has been published for the entire period unless otherwise indicated. If no discharge record is available the qualifying statement "(gage heights)" is added. For other variations the notes are self-explanatory. Complete details may be obtained through reference to the sources noted in the bibliography.

Under "Extremes" are given, for the periods indicated, the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). Unless otherwise qualified, the maximum discharge corresponds to the crest stage, obtained by use of a water-stage recorder or a nonrecording gage read at the time of the crest. Likewise, the minimum discharge represents the lowest momentary discharge, unless otherwise qualified. The accuracy of the records is stated in general terms, with detailed discussion where appropriate, and general information is given in regard to diversions that decrease the flow and artificial regulation from pondage or storage. Special mention is made of records or field data furnished by cooperating parties, of unusual conditions or methods used in making discharge measurements, and of other information having an important bearing on the records.

Tables of monthly and yearly discharge

All records of monthly discharge have been recomputed for this report from the daily discharge in accordance with present rules governing the preparation of records for publication in the annual reports on surface-water supply; and full records of yearly discharge for both the water year and the calendar year, recomputed from the monthly figures, are given in their appropriate order in the monthly tables. A condensed yearly table follows the monthly summary for each station.

In the monthly tables, the figures of second-foot-days for each month are the exact totals of the daily discharge figures for that month, and for each year they are the exact totals of such figures for the 12 months in that year. The figures of mean discharge for each month and year are computed from the corresponding figures of second-foot-days by dividing them by the number of days in the month or year specified. The maximum and minimum discharge in each month and year are the maximum and minimum daily mean discharge in that month or year. The runoff in acre-feet for each month is computed by multiplying the second-foot-days for that month by the factor 1.983471. The yearly runoff in acre-feet is not similarly determined, however, but is the sum of the monthly runoff in acre-feet for all 12 of the months in that year.

Because second-foot-days are primarily computation figures, they are expressed in all the digits which occur when the daily discharge figures are totaled. For convenience of use, values of mean discharge are given to four significant figures, but are not carried beyond the nearest unit except for values below 100. Similarly, values of acre-feet are given to four significant figures, but are not carried beyond the nearest 10, except for values below 1,000 and are seldom carried beyond the nearest unit in any case. Values of daily mean discharge are usually expressed to only three significant figures, and so the monthly or yearly maximum or minimum appears accordingly.

It should be particularly noted that the refinement applied to many of the numerical expressions of discharge and runoff is not wholly warranted by the accuracy of the base data from which these figures are derived, but that they are thus uniformly refined for the sake of convenience in using them. The accuracy of each record is discussed in the station description. It is also appropriate to note that the complete presentation of figures may enable the user of these records to detect most accidental errors of computation or typography, and with rare exceptions, to determine the correct figure from the context.

In the preparation of these summaries of discharge records, it has been the endeavor to point out every figure not derived from complete base data and to explain every figure that does not agree with the latest previously published figure for the same item. For many items, recomputation has produced new figures not identical with those previously published because of the greater refinement of the later figures, but still not materially different if reduced to the number of significant figures by which the item was previously expressed. No individual notes of such occurrences are shown. New figures have resulted for other items from the correction of previous typographical and computation errors as well as from new interpretations of base data. If these new figures are not essentially different from those previously published and do not discredit the previously published data from which they were derived, they have been termed "corrected" figures and are designated by a double dagger (‡). If the difference between the new and previously published figure for any item is so great as to indicate considerable error in the previous

figure or figures from which it was computed, the new figure is termed "revised".

Footnotes are used to explain various details of change, addition, deletion, correction, and revision of individual items having little or no effect on contiguous or related data. General notes following footnotes, if any, give information of changes or revisions of broader effect, for explanation of inclusion of more extensive added material, and for greater discussion of various pertinent details.

Because of the fundamental nature of stream gaging, it is inevitable that the continuity of basic records will be broken by a great variety of happenings, ranging from the long periods of interruption or interference by ice, in some regions, to the frequent clogging of recording-gage stilling wells by silt, in others. Details of occurrences that cause the breaks and the methods used to complete the interrupted records are discussed in connection with the records of daily discharge published in the annual reports on surface water supply. To put it briefly, the gaps are filled by estimates of discharge, whether for an hour, a day, or a longer period.

For those months for which the records are computed from the daily discharge, notation is made in the monthly summary tables in connection with the figure of second-foot-days if the total of estimated discharge, whether for individual days or for periods of several days, constitutes a considerable part of the total for the month. In most cases, such figures of total second-foot-days are simply designated as "partly estimated" and indicated by a dagger (†), but in special cases are more fully explained by a footnote. For longer periods, monthly estimates are made, usually in the form of monthly mean discharge, but frequently in the form of monthly runoff in acre-feet. In any case, only one quantity of monthly flow is described as estimated, as the other quantities for that month are computed from the one estimated. For example, if the monthly mean discharge is estimated, a figure of second-foot-days of runoff is computed from it, and from that is computed the figure of acre-feet of runoff. The reverse procedure obtains if the figure of monthly runoff in acre-feet is estimated. In the records for such months, the computed figures are not separately indicated as such, but that fact is to be inferred from the notation on the corresponding estimated figure. All estimated figures are indicated as such wherever they appear, and in these tables most of them are marked by an asterisk (*), but some are indicated by an explanatory footnote. The maximum or minimum figure for any month or year is given only when definitely determinable from the daily discharge.

BIBLIOGRAPHY

The data in this report consist of records of monthly and yearly discharge and summarized descriptions of gaging stations. For records of daily discharge and other detailed information, the publications listed in the following bibliography should be consulted. All such detailed records published prior to those for 1914 were on the basis of the calendar year. Beginning with the report for 1914, all records have been published on the basis of the water year, which ends September 30. The record years listed in the bibliography, therefore, are either calendar year or water year, depending on which year is used in the publication cited. The records for October to December 1913 are contained in reports for both 1913 and 1914.

Publication of records of daily discharge was begun with the report for 1909, prior to which rating tables were published by use of which daily discharge could be computed from the daily gage heights, which were given for each station. Publication of daily gage

heights was, in general, discontinued with the report for 1913. Publication of discharge measurements was discontinued with the report for 1926. Except as indicated, monthly discharge has been published for all years of record.

The Geological Survey publications cited in the bibliography may be obtained or consulted as explained below.

1. Copies of reports still in print may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey. An up-to-date list of these offices is given in the annual reports on surface water supply of the United States or may be obtained on application to the Director of the Geological Survey, Washington, D. C. A full list of Geological Survey publications may be had on request to the Director.

Of the biennial reports of the State engineer of Colorado, to which reference is made in the bibliography, only those later than the report for 1935-36 contain figures of yearly discharge.

Stream-flow data for base stations

Publications of the Geological Survey are indicated by the following abbreviations: A, Annual Report; B, Bulletin; W, Water-Supply Paper. An asterisk (*) indicates that the records in the publication so marked have been revised in later publications. A dagger (†) indicates that the records do not include those of monthly discharge. A double dagger (‡) indicates that the figure of maximum discharge as given or the date of its occurrence has been revised in later publications. An index number referring to location as shown on the map (pl. 1) is given in parentheses after the name of each station.

Gaging station	Record year	Publication
Bill Williams River		See Williams River
Colorado River above diversions to Grand Valley, Colo.	1897-1927	†W 617, p. 42; W 918, p. 61.(Yearly discharge only.)
	1928-38	†W 918, p. 61.(Yearly discharge only.) Not previously published.
Colorado River at Bright Angel Creek, near Grand Canyon, Ariz. (40)	1923	W 569, p. 17.
	1924	W 589, p. 17.
	1925	W 609, p. 17.
	1926	W 629, p. 19.
	1927	W 649, p. 16.
	1928	W 669, p. 16.
	1929	W 689, p. 16.
	1930	W 704, p. 15.
	1931	W 719, p. 15.
	1932	W 734, p. 15.
	1933	W 749, p. 15.
	1934	W 764, p. 18.
	1935	W 789, p. 21.
	1936	W 809, p. 21.
	1937	W 829, p. 16.
	1938	W 859, p. 21.
Colorado River at Bulls Head, near Mohave, Ariz. (44)	1902	†W 81, p. 71; †W 85, p. 20; †W 100, p. 29; †W 300, p. 422.
	1903	†W 100, p. 29; †W 300, p. 422.

Note.- Colorado River above Green River was published as Grand River prior to the report for 1919. By act of Congress, the name of Grand River was changed to Colorado River on July 25, 1921.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Colorado River at Glenwood Springs, Colo. (3)	1899	†W 37, p. 293; †W 74, p. 128; *A 22, pt. 4, p. 389; W 918, p. 40.
	1900	†W 50, p. 375; †W 52, p. 520; *A 22, pt. 4, p. 389; *W 74, p. 128; *W 395, p. 73; W 617 p. 220.
	1901	†W 66, pp. 92, 174; *W 75, p. 174; *W 395, p. 73; W 617, p. 220.
	1902	*W 85, p. 48; *W 395, p. 73; W 617, p. 220.
	1903	*W 100, p. 89; *W 395, p. 73; W 617, p. 220.
	1904	*W 133, p. 139; *W 395, p. 73; *W 617, p. 220; W 918, p. 40.
	1905	*W 175, p. 81; *W 395, p. 73; W 617, p. 220.
	1906	*W 211, p. 72; *W 395, p. 73; W 617, p. 220.
	1907	*W 249, p. 101; *W 395, p. 73; W 617, p. 220.
	1908	*W 249, p. 101; *W 395, p. 73; W 617, p. 220.
	1909	*W 269, p. 100; *W 395, p. 73; W 617, p. 220.
	1910	W 289, p. 121; W 395, p. 73; W 617, p. 220.
	1911	W 309, p. 99; W 395, p. 73; W 617, p. 220.
	1912	*W 329, p. 88; W 395, p. 73; W 617, p. 220.
	1913	W 359, p. 90; *W 395, p. 73; W 617, p. 220.
	1914	W 389, p. 44; W 395, p. 73; W 617, p. 220.
	1915	W 409, p. 63; W 617, p. 220.
	1916	W 439, p. 77; W 617, p. 220.
	1917	W 459, p. 68; W 617, p. 220.
	1918	W 479, p. 78; W 617, p. 220.
	1919	W 509, p. 12; W 617, p. 220.
	1920	W 509, p. 12; W 617, p. 220.
	1921	W 529, p. 12; W 617, p. 220.
	1922	W 549, p. 12; *W 617, p. 220; W 918, p. 40.
	1923	W 569, p. 8; W 617, p. 220.
	1924	W 589, p. 11; *W 617, p. 220; W 918, p. 40.
	1925	W 609, p. 10; W 617, p. 220.
	1926	W 617, p. 220; W 629, p. 12.
	1927	W 617, p. 220; W 649, p. 11.
	1928	W 669, p. 11.
	1929	W 689, p. 11.
	1930	W 704, p. 11.
	1931	W 719, p. 11.
	1932	W 734, p. 11.
	1933	W 749, p. 11.
	1934	W 764, p. 14.
	1935	W 789, p. 17.
	1936	W 809, p. 17.
	1937	W 829, p. 12.
	1938	W 859, p. 14.
Colorado River at Grand Junction, Colo. (11)	1894	†B 131, pp. 48, 92; †B 140, p. 186; †A 18, pt. 4, p. 260; †W 74, p. 129.
	1895	†B 140, p. 186; †A 18, pt. 4, p. 260; †W 74, p. 129.
	1896	†A 18, pt. 4, p. 260; †W 11, p. 67; †W 74, p. 129.
	1897	*A 19, pt. 4, p. 399; *†A 20, pt. 4, p. 58; †W 16, p. 137; *W 74, p. 129; W 395, p. 79; W 617, p. 232.
	1898	A 20, pt. 4, pp. *†58, 388; †W 28, pp. 131, 135, 142, 144; W 74, p. 129; W 395, p. 79; W 617, p. 232.
	1899	A 21, pt. 4, p. 280; †W 37, p. 294; †W 39, p. 451; W 74, p. 129; W 395, p. 79; W 617, p. 232.
	1900	†W 50, p. 376; †W 74, p. 129; †A 22, pt. 4, p. 388.
Colorado River at Hardyville, Ariz. (45)	1905	W 175, p. 128; W 213, p. 23; W 300, p. 417; W 395, p. 95.
	1906	W 211, p. 97; W 213, p. 23; W 300, p. 417; W 395, p. 95.
	1907	W 249, p. 39; W 251, p. 31; W 300, p. 417; W 395, p. 95.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Colorado River at Hot Sulphur Springs, Colo. (1) (Originally published as Colorado River at Sulphur Springs, 1907-13. Records for 1904-38 published also in reports of State engineer of Colorado.)	1904	*W 133, p. 135; W 617, p. 211.
	1905	*W 175, p. 76; W 617, p. 211.
	1906	W 211, p. 67; W 617, p. 211.
	1907	W 249, p. 91; W 617, p. 211.
	1908	W 249, p. 91; W 617, p. 211.
	1909	W 269, p. 94; W 617, p. 211.
	1910	W 289, p. 117; W 617, p. 211.
	1911	†W 309, p. 95; W 617, p. 211.
	1912	†W 329, p. 84; W 617, p. 211.
	1913	W 359, p. 87; W 617, p. 211.
	1914	W 389, p. 41; *W 617, p. 211; W 918, p. 28.
	1915	W 409, p. 60; W 617, p. 211.
	1916	*W 439, p. 73; W 617, p. 211.
	1917	*W 459, p. 64; W 617, p. 211.
	1918	W 479, p. 74; *W 617, p. 211; W 918, p. 28.
	1919	W 509, p. 10; W 617, p. 211.
	1920	W 509, p. 10; *W 617, p. 211; W 918, p. 28.
	1921	W 529, p. 10; W 617, p. 211.
	1922	W 549, p. 10; W 617, p. 211.
	1923	W 569, p. 7; *W 617, p. 211; W 918, p. 28.
	1924	W 589, p. 9; W 617, p. 211.
	1925	W 589, p. 9.
	1926	W 629, p. 11; W 617, p. 211.
	1927	W 649, p. 10; W 617, p. 211.
	1928	W 669, p. 10.
	1929-33	W 918, p. 28. Not previously published by Geological Survey.
	1934	W 764, p. 13.
	1935	W 789, p. 16.
	1936	W 809, p. 16.
	1937	W 829, p. 11.
	1938	W 859, p. 13.
Colorado River at Lees Ferry, Ariz. (37)	1895-1910	*W 556, p. 101; †W 918, p. 174. (Yearly discharge only.)
	1911-23	*W 556, p. 101; W 918, p. 174.
	1921	*W 549, p. 17; W 859, p. 17.
	1922	*W 549, p. 17; W 859, p. 17.
	1923	*W 569, p. 15; W 859, p. 17.
	1924	W 589, p. 16.
	1925	W 609, p. 15.
	1926	W 629, p. 17.
	1927	W 649, p. 15.
	1928	W 669, p. 15.
	1929	W 689, p. 15.
	1930	W 704, p. 14.
	1931	W 719, p. 14.
	1932	W 734, p. 14.
	1933	W 749, p. 14.
	1934	W 764, p. 17.
	1935	W 789, p. 20.
	1936	W 809, p. 20.
	1937	W 829, p. 15.
	1938	W 859, p. 17.
Colorado River at Yuma, Ariz. (60)	1876	†Annual report of Chief of Engineers, U. S. Army, 1876, appendix JJ, pt. 3, pp. 291-292, 339-340. †A 12, pt. 2, p. 290; †B 140, p. 207; †A 18, pt. 4, p. 298; †W 81, p. 69; †W 300, p. 423.
	1878-91	†W 300, p. 444. (Yearly maximum and minimum gage heights only.)
	1878-1905	†W 177, p. 17. (Yearly maximum and minimum gage heights only.)
	1880-91	†A 12, pt. 2, p. 290.
	1891	†A 12, pt. 2, p. 290; †B 140, p. 207; †W 177, p. 13; †W 300, p. 423.
	1892	†B 140, p. 207; †W 300, p. 423.
	1893	†B 140, p. 207; †W 300, p. 423.
	1894	†B 131, p. 51; †W 300, p. 423.
	1895	†B 140, p. 207; †A 18, pt. 4, p. 298; †W 81, p. 69; †W 300, p. 423.
	1896	†A 18, pt. 4, p. 298; †W 11, p. 73; †W 81, p. 69; †W 300, p. 423.
	1897	†W 16, p. 151; †W 300, p. 423.
	1898	†W 28, pp. 133, 141; †W 300, p. 423.
	1899	†W 38, p. 324; †W 300, p. 423.
	1900	†W 50, p. 387; †W 300, p. 423.
	1901	†W 66, p. 104; †W 81, p. 70; †W 300, p. 423.
	1902	W 81, p. 70; W 85, p. 17; W 300, p. 423; W 395, p. 96.
	1903	W 100, p. 19; W 300, p. 423; W. 395, p. 96.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Colorado River at Yuma, Ariz.--Continued	1904	W 133, p. 25; W 134, p. 20; W 300, p. 423; W 395, p. 96.
	1905	W 162, p. 48; W 177, p. 13, W 300, p. 423; W 395, p. 96.
	1906	W 213, p. 26; W 300, p. 423; W 395, p. 96.
	1907	W 249, p. 41; W 251, p. 33; W 300, p. 423; W 395, p. 96.
	1908	W 249, p. 41; W 251, p. 33; W 300, p. 423; W 395, p. 96.
	1909	W 269, p. 44; W 271, p. 32; W 300, p. 423; W 395, p. 96.
	1910	W 289, p. 30; W 300, p. 423; W 395, p. 96.
	1911	W 300, p. 423; W 309, p. 22; W 395, p. 96.
	1912	W 300, p. 423; W 329, p. 21; W 395, p. 96.
	1913	W 395, p. 96; *W 359, p. 22; W 918, p. 244.
	1914	W 395, p. 96; *W 389, p. 19; W 918, p. 244.
	1915	W 409, p. 22.
	1916	W 439, p. 21.
	1917	W 459, p. 19.
	1918	*W 479, p. 15.
	1919	W 509, p. 23.
	1920	W 509, p. 23.
	1921	W 529, p. 18.
	1922	W 549, p. 20.
	1923	W 569, p. 20.
	1924	W 589, p. 20.
	1925	W 609, p. 20.
	1926	W 629, p. 22.
	1927	W 649, p. 18.
	1928	W 669, p. 18.
	1929	W 689, p. 18.
	1930	W 704, p. 17.
	1931	W 719, p. 17.
	1932	W 734, p. 17.
	1933	W 749, p. 17.
	1934	W 764, p. 23.
	1935	W 789, p. 27.
	1936	W 809, p. 27.
	1937	W 829, p. 22.
	1938	W 859, p. 28.
Colorado River below heading No. 3 of Imperial canal, Baja California. (66)	1905	†W 177, p. 17; †W 300, p. 452.
	1906	†W 213, p. 29; †W 300, p. 453.
Colorado River below Parker Dam, Ariz.-Calif. (49) (Published as Colorado River near Parker, Ariz., prior to 1938.)	1934	†W 764, p. 21.
	1935	W 789, p. 25.
	1936	W 809, p. 25.
	1937	W 829, p. 20.
	1938	W 859, p. 26.
Colorado River near Cameo, Colo. (5)	1934	W 764, p. 15.
	1935	W 789, p. 18.
	1936	W 809, p. 18.
	1937	W 829, p. 13.
	1938	W 859, p. 15.
Colorado River near Cisco, Utah. (16) See also Colorado River near Moab, Utah.	1895-1910	†W 556, p. 101. (Yearly discharge only.)
	1911-23	*W 556, p. 101; W 918, p. 97.
	1915	W 409, p. 68; W 617, p. 237.
	1916	W 439, p. 82; W 617, p. 237.
	1917	W 459, p. 72; W 617, p. 237.
	1923	W 569, p. 13; W 617, p. 237.
	1924	*W 617, p. 237; W 589, p. 14.
	1925	*W 617, p. 237; W 609, p. 13.
	1926	*W 617, p. 237; W 629, p. 16.
	1927	*W 617, p. 237; W 649, p. 14.
	1928	W 669, p. 14.
	1929	W 689, p. 14.
	1930	W 704, p. 13.
	1931	W 719, p. 13.
	1932	W 734, p. 13.
	1933	W 749, p. 13.
	1934	W 764, p. 16.
	1935	W 789, p. 19.
	1936	W 809, p. 19.
	1937	*W 829, p. 14; W 918, p. 97.
	1938	*W 859, p. 16; W 918, p. 97.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Colorado River near Fruita, Colo. (14)	1908	W 359, p. 94; W 395, p. 80; W 617, p. 233.
	1909	W 359, p. 94; *W 395, p. 80; W 617, p. 233.
	1910	W 359, p. 94; *W 395, p. 80; W 617, p. 233.
	1911	†W 309, p. 103; W 359, p. 94; W 395, p. 80; W 617, p. 233.
	1912	†W 329, p. 92; W 359, p. 94; W 395, p. 80; W 617, p. 233.
	1913	W 359, p. 94; *W 395, p. 80; W 617, p. 233.
	1914	W 389, p. 47; *W 395, p. 80; W 617, p. 233.
	1915	W 409, p. 66; W 617, p. 233.
	1916	W 439, p. 80; W 617, p. 233.
	1917	W 459, p. 71; W 617, p. 233.
	1918	W 479, p. 81; *W 617, p. 233.
	1919	W 509, p. 17; W 617, p. 233.
	1920	W 509, p. 17; *W 617, p. 233; W 918, p. 92.
	1921	W 529, p. 15; ‡W 617, p. 233; W 918, p. 92.
	1922	W 549, p. 15; W 617, p. 233.
	1923	W 569, p. 12; W 617, p. 233.
Colorado River near Kremmling, Colo. (2)	1904	W 133, p. 137; W 395, p. 71; W 617, p. 216.
	1905	W 175, p. 78; W 395, p. 71; W 617, p. 216.
	1906	W 211, p. 69; W 395, p. 71; W 617, p. 216.
	1907	W 249, p. 95; W 395, p. 71; W 617, p. 216.
	1908	W 249, p. 95; W 395, p. 71; W 617, p. 216.
	1909	W 269, p. 97; W 395, p. 71; W 617, p. 216.
	1910	W 289, p. 118; W 395, p. 71; *W 617, p. 216; W 918, p. 36.
	1911	W 309, p. 97; W 395, p. 71; W 617, p. 216.
	1912	W 329, p. 86; W 395, p. 71; *W 617, p. 216; W 918, p. 36.
	1913	W 359, p. 88; W 395, p. 71; W 617, p. 216.
	1914	W 389, p. 42; W 395, p. 71; W 617, p. 216.
	1915	W 409, p. 62; W 617, p. 216.
	1916	W 439, p. 75; W 617, p. 216.
	1917	W 459, p. 66; W 617, p. 216.
	1918	W 479, p. 75; W 617, p. 216.
Colorado River near Moab, Utah (17) (Published with records for Colorado River near Cisco, Utah, in this report and in W 617.)	1914	W 389, p. 48; W 395, p. 82; W 617, p. 237.
Colorado River near Palisade, Colo. (10)	1895	†W 74, p. 145.
	1897-1927	†W 617, p. 42. (Yearly discharge only.)
	1902	*W 85, p. 46; W 395, p. 77; W 617, p. 227.
	1903	*W 100, p. 87; W 395, p. 77; W 617, p. 227.
	1904	W 133, p. 142; W 395, p. 77; W 617, p. 227.
	1905	W 175, p. 84; W 395, p. 77; W 617, p. 227.
	1906	W 211, p. 74; W 395, p. 77; W 617, p. 227.
	1907	W 249, p. 105; W 395, p. 77; W 617, p. 227.
	1908	*W 249, p. 105; *W 395, p. 77; W 617, p. 227.
	1909	*W 269, p. 102; W 395, p. 77; W 617, p. 227.
	1910	W 289, p. 123; *W 395, p. 77; W 617, p. 227.
	1911	*W 309, p. 101; *W 395, p. 77; W 617, p. 227.
	1912	W 329, p. 90; W 395, p. 77; W 617, p. 227.
	1913	W 359, p. 92; W 395, p. 77; W 617, p. 227.
	1914	*W 389, p. 45; *W 395, p. 77; W 617, p. 227.
	1915	W 409, p. 65; W 617, p. 227.
	1916	W 439, p. 78; W 617, p. 227.
	1917	W 459, p. 69; W 617, p. 227.
	1918	W 479, p. 79; W 617, p. 227.
	1919	W 509, p. 15; W 617, p. 227.
	1920	*W 509, p. 15; *W 617, p. 227; W 918, p. 74.
	1921	W 529, p. 13; W 617, p. 227.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Colorado River near Palisade, Colo.--Continued.	1922	W 549, p. 13; W 617, p. 227.
	1923	W 569, p. 10; W 617, p. 227.
	1924	W 589, p. 13; W 617, p. 227.
	1925	W 609, p. 12; W 617, p. 227.
	1926	W 629, p. 14; W 617, p. 227.
	1927	W 649, p. 12; W 617, p. 227.
	1928	W 669, p. 12.
	1929	W 689, p. 13.
	1930	W 704, p. 12.
	1931	W 719, p. 12.
	1932	W 734, p. 12.
	1933	W 749, p. 12.
Colorado River near Picacho, Calif. (52)	1903-33	†W 918, p. 219. (Yearly discharge only.) Not previously published.
	1934	W 764, p. 22.
	1935	W 789, p. 26.
	1936	W 809, p. 28.
	1937	W 829, p. 21.
	1938	W 859, p. 27.
Colorado River near Topock, Ariz. (46)	1917	W 459, p. 18.
	1918	W 479, p. 13.
	1919	W 509, p. 20.
	1920	W 509, p. 20.
	1921	*W 529, p. 17.
	1922	W 549, p. 19.
	1923	W 569, p. 18.
	1924	W 589, p. 19.
	1925	W 609, p. 18.
	1926	W 629, p. 21.
	1927	W 649, p. 17.
	1928	W 669, p. 17.
	1929	W 689, p. 17.
	1930	W 704, p. 16.
	1931	W 719, p. 16.
	1932	W 734, p. 16.
	1933	W 749, p. 16.
	1934	W 764, p. 20.
	1935	W 789, p. 24.
	1936	W 809, p. 24.
	1937	W 829, p. 19.
	1938	W 859, p. 24.
Colorado River near Willow Beach, Ariz. (43)	1934	W 764, p. 19.
	1935	W 789, p. 23.
	1936	W 809, p. 23.
	1937	W 829, p. 18.
	1938	W 859, p. 23.
Colorado River past Yuma Ariz.	1902-38	†W 918, p. 255. (Yearly discharge only.) Not previously published.
Diversions from Colorado River above station near Palisade, to Grand Valley, Colo.	1897-1933	†W 918, p. 62. (Yearly discharge only.) Not previously published.
Diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley. (67)	1916-21	W 918, p. 270. Not previously published.
Diversions from Colorado River to Colorado River Indian Reservation at Parker, Ariz. (50)	1915-38	W 879, p. 202; W 918, p. 214. (Yearly discharge only, 1915-36.)
Diversions from Colorado River to Imperial Valley, California-Baja California.		See Imperial canal at headings in United States and Mexico; Imperial canal at Hanlon heading, at Andrade, Calif.; and Diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley. See also, Colorado River below heading No. 3 of Imperial canal.
Diversions from Colorado River to North Gila Valley, near Yuma, Ariz. (53)	1935-38	W 918, p. 221. Not previously published.
Diversions from Colorado River to Palo Verde Valley, near Blythe, Calif. (51)	1922-23 1925-38	W 879, p. 203, W 918, p. 215.
Dolores River at Gateway, Colo. (15)	1937	*W 829, p. 69; W 859, p. 76.
	1938	W 859, p. 76.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Duchesne River at Myton, Utah (27) (Originally published as Duchesne River at Price Road Bridge, 1899-1902.)	1899	*A 21, pt. 4, pp. 322, 325; †W 37, p. 291.
	1900	*A 22, pt. 4, p. 385; †W 50, p. 374; †W 52, p. 519; *W 395, p. 55; *W 618, p. 381; W 918, p. 136.
	1901	†W 66, pp. 88, 174; W 75, p. 167; *W 395, p. 55; *W 618, p. 381; W 918, p. 136.
	1902	W 85, p. 55; W 395, p. 55; W 618, p. 381.
	1903	W 100, p. 106; W 395, p. 55; W 618, p. 381.
	1904	W 133, p. 113; W 395, p. 55; W 618, p. 381.
	1905	†W 175, p. 66; W 249, p. 56; W 395, p. 55; W 618, p. 381.
	1906	W 211, p. 54; W 395, p. 55; W 618, p. 381.
	1907	W 249, p. 56; W 395, p. 55; W 618, p. 381.
	1908	W 249, p. 56; W 395, p. 55; W 618, p. 381.
	1909	W 269, p. 55; W 395, p. 55; W 618, p. 381.
	1910	W 289, p. 71; W 395, p. 55; W 618, p. 381.
	1911	W 309, p. 67; W 395, p. 55; W 618, p. 381.
	1912	W 329, p. 58; W 395, p. 55; W 618, p. 381.
	1913	W 359, p. 60; W 395, p. 55; W 618, p. 381.
	1914	W 389, p. 24; W 395, p. 55; W 618, p. 361.
	1915	W 409, p. 42; W 618, p. 381.
	1916	W 439, p. 54; W 618, p. 381.
	1917	W 459, p. 44; W 618, p. 381.
	1918	W 479, p. 42; W 618, p. 381.
	1919	W 509, p. 145; W 618, p. 381.
	1920	W 509, p. 145; W 618, p. 381.
	1921	W 529, p. 97; W 618, p. 381.
	1922	W 549, p. 92; W 618, p. 381.
	1923	W 569, p. 80; W 618, p. 381.
	1924	W 589, p. 76; W 618, p. 381.
	1925	W 609, p. 62; W 618, p. 381.
	1926	W 629, p. 60; W 618, p. 381.
	1927	W 649, p. 43.
	1928	W 669, p. 40.
	1929	W 689, p. 43.
	1930	W 704, p. 44.
	1931	W 719, p. 45.
	1932	W 734, p. 50.
	1933	W 749, p. 44.
	1934	W 764, p. 71.
	1935	W 789, p. 87.
	1936	W 809, p. 88.
	1937	W 829, p. 91.
	1938	W 859, p. 104.
Gila River at Dome, (formerly Gila City), Ariz. (57) (Published as Gila River at Gila City for 1903 and Gila River near Gila City for 1904. Published with records for Gila River near Dome in this report.)	1903	W 100, p. 27.
	1904	*W 133, p. 204; *W 395, p. 112; W 918, p. 235.
	1905	W 162, p. 47; W 175, p. 164; *W 395, p. 112; W 918, p. 235.
	1906	W 211, p. 124; W 395, p. 112.
	1907	W 395, p. 112.
Gila River at Yuma, Ariz. (59) (Described as near mouth of Gila River in 1902. Published with records for Gila River near Dome, Ariz., in this report.)	1902	†W 85, p. 77.
	1903	W 100, p. 26.
Gila River below Gillespie Dam, Ariz. (55) (Previously published as Gila River at Gillespie Dam.)	1891	†W 81, p. 410.
	1921-24	W 589, p. 106.
	1925	W 609, p. 95.
	1926	W 629, p. 95.
	1927	W 649, p. 68.
	1928	W 669, p. 65.
	1929	W 689, p. 73.
	1930	W 704, p. 81.
	1931	W 719, p. 83.
	1932	W 734, p. 104.
	1933	W 749, p. 89.
	1934	W 764, p. 126.
	1935	W 789, p. 142.
	1936	W 809, p. 152.
	1937	W 829, p. 163.
	1938	W 859, p. 242.
Gila River near Dome, Ariz. (58) See also Gila River at Dome, Ariz., and Gila River at Yuma, Ariz.	1907-29	W 918, p. 235. January 1907 to April 1929 not previously published.
	1929	W 689, p. 74.
	1930	W 704, p. 82.
	1931	W 719, p. 84.
	1932	W 734, p. 105.
	1933	W 749, p. 90.
	1934	W 764, p. 127
	1935	W 789, p. 143.
	1936	W 809, p. 153.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Gila River near Dome, Ariz.--Continued.	1937	W 829, p. 164.
	1938	W 859, p. 243.
Gila River near Sentinel, Ariz. (56)	1891	†W 81, p. 410
	1913	†W 359, p. 221; W 918, p. 234) Monthly discharge not previously published, except for October 1913 to December 1914.
	1914	*W 389, p. 160; W 918, p. 234)
	1915	W 409, p. 159; W 918, p. 234)
	1916	†W 439, p. 162; W 918, p. 234)
	1917	†W 459, p. 154.
Government high-line canal near Palisade, Colo. (7) (Published as Grand Valley main canal in W 617 and as Government canal above Palisade in W 609.)	1915-24	*†W 617, p. 42; W 918, p. 62.
	1925	*W 609, p. 13; †W 617, p. 42; W 918, p. 62.
	1926	†W 617, p. 42.
	1927	†W 617, p. 42; W 649, p. 13.
	1928	W 669, p. 13.
	1929-33	W 918, p. 62. Not previously published.
Green River at Bridgeport, Utah. (22) See also Green River near Bridgeport, Utah.	1915	W 409, p. 17; W 618, p. 271.
Green River at Flaming Gorge, near Linwood, Utah. (21)	1924-38	W 918, p. 118. Not previously published.
Green River at Green River, Utah. (33) (Published as Green River at Blake, 1894-99, and Green River near Elgin, 1911. Records for 1895-97 and 1905-11 published with records for Green River at Little Valley, near Green River, Utah, in W 395.) See also Green River at Little Valley, near Green River, Utah.	1894	†B 131, pp. 48, 92; †B 140, p. 202; *†A 18, pt. 4, p. 275; W 918, p. 154.
	1895	†B 140, p. 202; *A 18, pt. 4, p. 275; *†A 20, pt. 4, p. 58; W 395, p. 45; W 618, p. 274; W 918, p. 154.
	1896	†W 11, p. 70; *A 18, pt. 4, p. 275; *†A 20, pt. 4, p. 58; *W 395, p. 45; *W 618, p. 274; W 918, p. 154.
	1897	†W 16, p. 136; *A 19, pt. 4, p. 394; *†A 20, pt. 4, p. 58; *W 395, p. 45; *‡W 618, p. 274; W 918, p. 154.
	1898	†W 28, pp. 131, 134, 144; *A 20, pt. 4, pp. †58, 387; *W 618, p. 274; W 918, p. 154.
	1899	†W 37, p. 292; †W 39, p. 451; *A 21, pt. 4, p. 304; *W 618, p. 274; W 918, p. 154.
	1900	*W 618, p. 274; W 918, p. 154.
	1905	*W 175, p. 19; W 269, p. 39; W 395, p. 45; W 618, p. 274.
	1906	*W 211, p. 28; *W 269, p. 39; *W 395, p. 45; *W 618, p. 274; W 918, p. 154.
	1907	*W 249, p. 36; *W 269, p. 39; *W 395, p. 45; *W 618, p. 274, W 918, p. 154.
	1908	*W 249, p. 36; W 269, p. 39; W 395, p. 45; W 618, p. 274.
	1909	W 269, p. 39; W 395, p. 45; W 618, p. 274.
	1910	W 289, p. 28; W 395, p. 45; W 618, p. 274.
	1911	W 309, p. 19; W 395, p. 45; W 618, p. 274.
	1924	W 589, p. 56; W 618, p. 274.
	1925	W 609, p. 48; W 618, p. 274.
	1926	W 629, p. 47; W 618, p. 274.
	1927	W 649, p. 33.
	1928	W 669, p. 31.
	1929	W 689, p. 30.
	1930	W 704, p. 31.
	1931	W 719, p. 30.
	1932	W 734, p. 30.
	1933	W 749, p. 29.
	1934	W 764, p. 53.
	1935	W 789, p. 70.
	1936	W 809, p. 70.
	1937	W 829, p. 73.
	1938	W 859, p. 81.
Green River at Green River, Wyo. (16)	1891	B 140, p. 200.
	1895	†A 18, pt. 4, p. 272; *B 140, p. 200; *W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1896	†W 11, p. 70; *A 18, pt. 4, p. 272; *W 395, p. 41; *W 469, p. 255; *W 618, p. 266; W 918, p. 104.
	1897	†W 16, p. 135; *A 19, pt. 4, p. 394; *†A 20, pt. 4, p. 58; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1898	†W 28, pp. 131, 134, 142, 144; *A 20, pt. 4, pp. 58, 380; W 395, p. 41; W 469, p. 255; W 618, p. 266.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Green River at Green River, Wyo.--Continued.	1899	†W 37, p. 286; †W 39, p. 451; *A 21, pt. 4, p. 302; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1900	†W 50, p. 366; *W 395, p. 41; *W 469, p. 255; *W 618, p. 266; W 918, p. 104.
	1901	†W 66, pp. 82, 173; W 75, p. 164; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1902	W 85, p. 75; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1903	†W 100, p. 124; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1904	W 133, p. 53; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1905	W 175, p. 14; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1906	W 211, p. 25; W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1907	W 395, p. 41; W 469, p. 255; W 618, p. 266.
	1915	W 409, p. 16; W 469, p. 255; W 618, p. 266.
	1916	W 439, p. 17; W 469, p. 255; W 618, p. 266.
	1917	W 459, p. 13; W 469, p. 255; W 618, p. 266.
	1918	W 479, p. 9; W 469, p. 255; W 618, p. 266.
	1919	W 509, p. 107; W 469, p. 255; W 618, p. 266.
	1920	W 509, p. 107; W 469, p. 255; W 618, p. 266.
	1921	W 529, p. 69; W 469, p. 255; W 618, p. 266.
	1922	W 549, p. 63; W 618, p. 266.
	1923	W 569, p. 55; W 618, p. 266.
	1924	W 589, p. 54; W 618, p. 266.
	1925	W 609, p. 46; W 618, p. 266.
	1926	W 629, p. 45; *W 618, p. 266; W 918, p. 104.
	1927	W 649, p. 32.
	1928	W 669, p. 30.
	1929	W 689, p. 28.
	1930	W 704, p. 29.
	1931	W 719, p. 28.
	1932	W 734, p. 28.
	1933	W 749, p. 27.
	1934	W 764, p. 51.
	1935	W 789, p. 68.
	1936	W 809, p. 68.
	1937	*W 829, p. 71; W 918, p. 104.
	1938	W 859, p. 79.
Green River at Jensen, Utah (26) (Published as Green River near Vernal, 1903.)	1903	†W 100, p. 123; W 133, p. 56.
	1904	W 133, p. 56; W 395, p. 45; *‡W 618, p. 272; W 918, p. 135.
	1905	†W 175, p. 17; W 395, p. 45; W 618, p. 272.
	1906	W 211, p. 26; W 395, p. 45; W 618, p. 272.
	1914	W 389, p. 17; W 618, p. 272.
	1915	W 409, p. 19; W 618, p. 272.
Green River at Little Valley, near Green River, Utah (34) (Records for 1912-23 published with records for Green River at Green River, Utah, in this report and W 618.)	1910	†W 289, p. 30.
	1911	†W 309, p. 21.
	1912	W 329, p. 20; W 395, p. 45; W 618, p. 274.
	1913	W 359, p. 20; W 395, p. 45; W 618, p. 274.
	1914	W 389, p. 18; W 395, p. 45; W 618, p. 274.
	1915	W 409, p. 20; W 618, p. 274.
	1916	*W 439, p. 19; W 459, p. 15; W 618, p. 274.
	1917	W 459, p. 15; W 618, p. 274.
	1918	W 479, p. 11; *W 618, p. 274; W 918, p. 154.
	1919	W 509, p. 110; W 618, p. 274.
	1920	W 509, p. 110; W 618, p. 274.
	1921	W 529, p. 71; W 618, p. 274.
	1922	W 549, p. 64; W 618, p. 274.
	1923	W 569, p. 57; W 618, p. 274.
	1924	See Green River at Green River, Utah.
Green River near Bridgeport, Utah (23) (Published with records for Green River at Bridgeport, Utah, in this report and W 618.)	1911	W 309, p. 18.
	1912	W 329, p. 18; W 395, p. 44; W 618, p. 271.
	1913	W 359, p. 18; W 395, p. 44; W 618, p. 271.
	1914	W 389, p. 15; W 395, p. 44; W 618, p. 271.
Green River near Linwood, Utah (19)	1929	W 689, p. 29.
	1930	W 704, p. 30.
	1931	W 719, p. 29.
	1932	W 734, p. 29.
	1933	W 749, p. 28.
	1934	W 764, p. 52.
	1935	W 789, p. 69.
	1936	W 809, p. 69.
	1937	W 829, p. 72.
	1938	W 859, p. 80.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Gunnison River at Whitewater, Colo. (12) (Records for 1902-7 published with records for Gunnison River near Grand Junction, Colo., in this report and W 617.)	1895	†B 140, p. 189.
	1897	†W 16, p. 140.
	1901	†W 66, p. 94.
	1902	*W 85, p. 42; W 395, p. 85; W 617, p. 331.
	1903	W 100, p. 64; W 395, p. 85; W 617, p. 331.
	1904	W 133, p. 162; W 395, p. 85; W 617, p. 331.
	1905	W 175, p. 112; W 395, p. 85; W 617, p. 331.
	1906	W 211, p. 89; W 395, p. 85; W 617, p. 331.
	1907	W 617, p. 331.
Gunnison River near Grand Junction, Colo. (13) (Records for 1917-30 and 1934-38 published also in reports of State engineer of Colorado.) See also Gunnison River at Whitewater, Colo.	1894	†B 131, p. 48; †B 140, p. 189; †W 74, p. 133.
	1895	†B 140, p. 189; †W 74, p. 133.
	1897	*A 19, pt. 4, p. 404; †A 20, pt. 4, p. 58; †W 16, p. 141; *W 74, p. 133; *W 395, p. 86; W 617, p. 331.
	1898	A 20, pt. 4, p. 390; †W 28, pp. 136, 142, 144; W 74, p. 133; W 395, p. 86; W 617, p. 331.
	1899	*A 21, pt. 4, p. 278; †W 37, p. 297; †W 39, p. 451; *W 74, p. 133; *W 395, p. 86; W 617, p. 331.
	1900	†W 50, p. 378; †W 74, p. 135.
	1917	W 459, p. 109; *W 617, p. 331; W 918, p. 84.
	1918	W 479, p. 110; W 617, p. 331.
	1919	W 509, p. 61; W 617, p. 331.
	1920	W 509, p. 61; W 617, p. 331.
	1921	W 529, p. 41; W 617, p. 331.
	1922	W 549, p. 41; W 617, p. 331.
	1923	W 569, p. 39; W 617, p. 331.
	1924	W 589, p. 38; W 617, p. 331.
	1925	W 609, p. 34; W 617, p. 331.
	1926	W 617, p. 331; W 629, p. 34.
	1927	*W 617, p. 331; W 649, p. 25.
	1928	W 669, p. 25.
	1929-30	W 918, p. 84. Not previously published by Geological Survey.
	1931-33	W 918, p. 84. Not previously published.
	1934	W 764, p. 39.
	1935	W 789, p. 56.
	1936	W 809, p. 56.
	1937	W 829, p. 58.
	1938	W 859, p. 61.
Havasu Lake near Parker Dam, Ariz.-Calif. (48) (Previously published as Parker Reservoir near Parker Dam, Calif.)	1938	W 859, p. 25.
Henrys Fork at Linwood, Utah (20).	1929	W 689, p. 35.
	1930	W 704, p. 36.
	1931	W 719, p. 38.
	1932	W 734, p. 44.
	1933	W 749, p. 38.
	1934	W 764, p. 61.
	1935	W 789, p. 77.
	1936	W 809, p. 77.
	1937	W 829, p. 80.
	1938	W 859, p. 92.
Imperial canal at Hanlon heading, at Andrade, Calif. (62)	1908-38	W 918, p. 263. Not previously published.
Imperial canal at headings in United States and Mexico. (63, 64, 65) (Described as at international boundary, 1902, and published as Imperial canal at California-Mexico boundary line, 1903-4.)	1902	†W 85, pp. 15, 77; †W 300, p. 479.
	1903	†W 100, p. 27; †W 300, p. 453.
	1904	†W 133, p. 33; †W 134, p. 26; †W 300, p. 453.
	1905	W 177, pp. 20, 39, 42; W 300, p. 453.
Lake Mead at Boulder Dam, Ariz.-Nev. (42)	1935	*W 789, p. 22; W 918, p. 197.
	1936	*W 809, p. 22; W 918, p. 197.
	1937	*W 829, p. 17; W 918, p. 197.
	1938	*W 859, p. 22; W 918, p. 197.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Roaring Fork at Glenwood Springs, Colo.--Continued	1919	W 509, p. 49; W 617, p. 287.
	1920	W 509, p. 49; W 617, p. 287.
	1921	W 529, p. 53; W 617, p. 287.
	1922	W 549, p. 32; W 617, p. 287.
	1923	W 569, p. 32; W 617, p. 287.
	1924	W 589, p. 31; W 617, p. 287.
	1925	W 609, p. 27; W 617, p. 287.
	1926	W 629, p. 26; W 617, p. 287.
	1927	W 649, p. 21; W 617, p. 287.
	1928	W 669, p. 21.
	1929	W 689, p. 21.
	1930	W 704, p. 22.
	1931	W 719, p. 23.
	1932	W 918, p. 49. Not previously published by Geological Survey.
	1933	W 918, p. 49. Not previously published by Geological Survey.
	1934	W 764, p. 34.
	1935	W 789, p. 48.
	1936	W 809, p. 47.
	1937	W 829, p. 45.
	1938	W 859, p. 52.
Salton Sea, Calif. (68) (Published as Salton Sea near Salton, Calif., 1904-18. Publications prior to W 735 do not include elevations of water surface relative to mean sea level.)	1904-6	*W 213, p. 30; *W 249, p. 46; *W 251, p. 38; *W 269, p. 48; *W 271, p. 35; *W 290, p. 99; *W 300, pp. 29, 405; *W 310, p. 69; W 735, p. 57.
	1907-8	*W 249, p. 46; *W 251, p. 38; *W 269, p. 48; *W 271, p. 35; *W 290, p. 99; *W 300, pp. 29, 405; *W 310, p. 69; W 735, p. 57.
	1909	*W 269, p. 48; *W 271, p. 35; *W 290, p. 99; *W 300, pp. 29, 405; *W 310, p. 69; W 735, p. 57.
	1910	*W 290, p. 99; *W 300, pp. 29, 405; *W 310, p. 69; W 735, p. 57.
	1911	*W 300, pp. 29, 405; *W 310, p. 69; W 735, p. 57.
	1912	*W 330, p. 130; W 735, p. 57.
	1913	*W 360, p. 155; W 735, p. 57.
	1914	*W 390, p. 190; W 735, p. 57.
	1915	*W 410, p. 122; W 735, p. 57.
	1916	*W 440, p. 207; W 735, p. 57.
	1917	*W 460, p. 160; W 735, p. 57.
	1918	*W 480, p. 144; W 735, p. 57.
	1919-32	W 735, p. 57.
	1933	W 750, p. 60.
	1934	W 765, p. 55.
	1935	W 790, p. 56.
	1936	W 810, p. 51.
	1937	W 830, p. 53.
	1938	W 860, p. 58. See, for other information, W 162, p. 54; W 237, p. 125; W 395, p. 141; W 637, p. 7.
San Juan River near Bluff, Utah (36)	1915	W 409, p. 117.
	1916	W 439, p. 129.
	1917	*W 459, p. 128; W 918, p. 170.
	1927	W 649, p. 53.
	1928	W 669, p. 48.
	1929	W 689, p. 50.
	1930	W 704, p. 53.
	1931	W 719, p. 56.
	1932	W 734, p. 68.
	1933	W 749, p. 59.
	1934	W 764, p. 89.
	1935	W 789, p. 103.
	1936	W 809, p. 104.
	1937	W 829, p. 109.
	1938	W 859, p. 121.
San Rafael River near Green River, Utah. (35)	1909	W 269, p. 79; W 395, p. 66; W 618, p. 439.
	1910	W 289, p. 104; W 395, p. 66; W 618, p. 439.
	1911	W 309, p. 78; W 395, p. 66; W 618, p. 439.
	1912	W 329, p. 70; W 395, p. 66; W 618, p. 439.
	1913	W 359, p. 77; W 395, p. 66; W 618, p. 439.
	1914	W 389, p. 34; W 395, p. 66; W 618, p. 439.
	1915	W 409, p. 54; W 618, p. 439.
	1916	W 439, p. 66; W 618, p. 439.
	1917	W 459, p. 57; W 618, p. 439.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Little Colorado River at Grand Falls, Ariz. (39)	1926	W 629, p. 77.
	1927	W 649, p. 55.
	1928	W 669, p. 50.
	1929	W 689, p. 55.
	1930	W 704, p. 58.
	1931	W 719, p. 61.
	1932	W 734, p. 79.
	1933	W 749, p. 67.
	1934	W 764, p. 107.
	1935	W 789, p. 124.
	1936	*W 809, p. 131; W 918, p. 186.
	1937	W 829, p. 143.
	1938	W 859, p. 222.
Little Snake River near Lily, Colo. (25)	1900	†W 50, p. 375; †A 22, pt. 4, p. 395.
(Originally published as Snake River at Lily Park, 1900, and as Little Snake River near Maybell, 1904. Records for 1904 and 1922-38 published also in reports of State engineer of Colorado.)	1904	W 133, p. 85; W 618, p. 355.
	1905	†W 175, p. 49.
	1922	W 549, p. 81; W 618, p. 355.
	1923	W 569, p. 71; W 618, p. 355.
	1924	W 589, p. 68; W 618, p. 355.
	1925	W 609, p. 53; W 618, p. 355.
	1926	W 629, p. 53; W 618, p. 355.
	1927	W 649, p. 36.
	1928-33	W 918, p. 130. Not previously published by Geological Survey.
	1934	W 764, p. 66.
	1935	W 789, p. 82.
	1936	W 809, p. 82.
	1937	W 829, p. 85.
	1938	W 859, p. 98.
Orchard Mesa canal near Palisade, Colo. (8)	1910-22	†W 617, p. 42; W 918, p. 67.
Palo Verde canal near Blythe, Calif. (51)		See Diversions from Colorado River to Palo Verde Valley, near Blythe, Calif.
Paria River at Lees Ferry, Ariz. (38)	1924	W 589, p. 90.
	1925	W 609, p. 79.
	1926	W 629, p. 75.
	1927	W 649, p. 54.
	1928	W 669, p. 49.
	1929	*W 689, p. 51; W 918, p. 182.
	1930	W 704, p. 54.
	1931	W 719, p. 57.
	1932	W 734, p. 75.
	1933	W 749, p. 63.
	1934	W 764, p. 104.
	1935	W 789, p. 123.
	1936	W 809, p. 128.
	1937	W 829, p. 140.
	1938	W 859, p. 219.
Plateau Creek near Cameo, Colo. (6)	1936	W 809, p. 52.
	1937	W 829, p. 54.
	1938	W 859, p. 56.
Price and Stub ditches near Palisade, Colo. (9)	1897-1918	†W 617, p. 42; W 918, p. 69.
Price River at Woodside, Utah (32)	1909	W 289, p. 103.
	1910	*W 289, p. 103; *W 618, p. 432; W 918, p. 153.
	1911	†W 309, p. 77; *W 618, p. 432; W 918, p. 153.
Roaring Fork at Glenwood Springs, Colo. (4)	1899	†W 37, p. 294.
(Records for 1906-38 published also in reports of State engineer of Colorado.)	1900	†W 50, p. 376.
	1903	†W 100, p. 93.
	1904	†W 249, p. 130.
	1906	W 211, p. 83; W 395, p. 83; W 617, p. 287.
	1907	W 249, p. 130; W 395, p. 83; W 617, p. 287.
	1908	W 249, p. 130; W 395, p. 83; W 617, p. 287.
	1909	W 269, p. 159; W 395, p. 83; *W 617, p. 287; W 918, p. 49.
	1910	W 289, p. 134; *W 617, p. 287; W 918, p. 49.
	1911	W 309, p. 137; W 395, p. 83; *W 617, p. 287; W 918, p. 49.
	1912	W 329, p. 122; W 395, p. 83; W 617, p. 287.
	1913	W 359, p. 133; W 395, p. 83; W 617, p. 287.
	1914	W 389, p. 73; W 395, p. 83; W 617, p. 287.
	1915	W 409, p. 92; W 617, p. 287.
	1916	W 439, p. 105; W 617, p. 287.
	1917	W 459, p. 95; W 617, p. 287.
	1918	W 479, p. 101; W 617, p. 287.

Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
Yampa River near Maybell, Colo.--Continued.	1905	W 175, p. 39; W 395, p. 52; W 618, p. 319.
	1906	W 395, p. 52; W 618, p. 319.
	1910	W 289, p. 47; W 395, p. 52; W 618, p. 319.
	1911	W 309, p. 45; W 395, p. 52; W 618, p. 319.
	1912	W 329, p. 34; W 395, p. 52; W 618, p. 319.
	1913	W 618, p. 319.
	1916	W 439, p. 47; W 618, p. 319.
	1917	W 459, p. 39; W 618, p. 319.
	1918-26	*W 618, p. 319; W 918, p. 124. (Runoff in acre-feet for September 1926 is only revision.)
	1927-33	W 918, p. 124. Not previously published by Geological Survey.
	1934	W 764, p. 64.
	1935	W 789, p. 80.
	1936	W 809, p. 80.
	1937	W 829, p. 83.
	1938	W 859, p. 95.
Yuma main canal at Laguna Dam, near Yuma, Ariz. (54)	1910-38	W 916, p. 222. Not previously published except for 1931-34.
	1931	W 719, p. 18.
	1932	W 734, p. 18.
	1933	W 749, p. 18.
	1934	W 764, p. 24.
Yuma main canal wasteway at Yuma, Ariz. (61)	1913-30	W 918, p. 256. Not previously published.
	1931	W 719, p. 19.
	1932	W 734, p. 19.
	1933	W 749, p. 19.
	1934	W 764, p. 25.
	1935	W 789, p. 28.
	1936	W 809, p. 28.
	1937	W 829, p. 23.
	1938	W 859, p. 29.

Publications on related subjects

The following publications contain additional information on subjects related to the surface water supply of the Colorado River Basin. They include historical and general information and discussions of water utilization and flood control. Those that contain compilations of records of stream flow have also been referred to at suitable places in the preceding bibliography. Some of the later reports contain information that throws new light on subjects discussed in earlier publications, and some contain corrections and revisions of earlier data.

No.	Date of publication	Professional Papers
164	1931	The Kaiparowitz region, by H. E. Gregory and R. C. Moore. Describes the plateau region lying mostly in Utah, to the north of Lees Ferry, Ariz.
188	1938	The San Juan country, by H. E. Gregory. Describes the plateau region lying north of the San Juan River and east of the Colorado River in southeastern Utah.
		Bulletins
612	1915	Guidebook of the western United States, Part B, The Overland Route, with a side trip to Yellowstone Park, by W. T. Lee and others.
613	1915	Guidebook of the western United States, Part C, The Santa Fe Route, with a side trip to the Grand Canyon, by N. H. Darton and others.
707	1922	Guidebook of the western United States, Part E, The Denver & Rio Grande Western Route, by M. R. Campbell.
845	1933	Guidebook of the western United States, part F, The Southern Pacific lines, New Orleans to Los Angeles, by N. H. Darton.
		Water-Supply Papers
2	1897	Irrigation near Phoenix, Ariz., by A. P. Davis. Discusses the Gila River Basin.
33	1900	Storage of water on Gila River, Ariz., by J. B. Lippincott.

* Stream-flow data for base stations--Continued

Gaging station	Record year	Publication
San Rafael River near Green River, Utah--Continued	1918	W 479, p. 67; W 618, p. 439.
	1919-20	†W 509, p. 184.
Stub ditch near Palisade, Colo.		See Price and Stub ditches near Palisade, Colo.
Uinta River at Fort Duchesne, Utah. (26)	1899	†W 37, p. 290; *A 21, pt. 4, pp. 322, 324; *W 618, p. 407; W 918, p. 145.
(Published with records for Uinta River near Fort Duchesne, Utah, in this report and W 618.)	1900	A 21, pt. 4, pp. 323, 324; †W 50, p. 370; *A 22, pt. 4, p. 376; *W 395, p. 58; *W 618, p. 407; W 918, p. 145.
	1901	†W 66, pp. 85, 174; *W 75, p. 166; *W 395, p. 58; W 618, p. 407.
	1902	W 85, p. 61; W 395, p. 58; W 618, p. 407.
	1903	W 100, p. 113; W 395, p. 58; *W 618, p. 407; W 918, p. 145.
	1904	W 133, p. 106; W 395, p. 58; W 618, p. 407.
	1905	W 395, p. 58; W 618, p. 407.
	1906	†W 211, p. 59.
	1907	W 249, p. 73; W 395, p. 58; W 618, p. 407.
	1908	*W 249, p. 73; *W 395, p. 58; *W 618, p. 407; W 918, p. 145.
	1909	W 269, p. 72; W 395, p. 58; W 618, p. 407.
	1910	W 289, p. 89; W 395, p. 58; W 618, p. 407.
	1911	W 395, p. 58; W 618, p. 407.
Uinta River near Fort Duchesne, Utah. (29)	1917	†W 459, p. 186; W 509, p. 166; *W 618, p. 407; W 918, p. 145.
See also Unita River at Fort Duchesne, Utah.	1918	†W 479, p. 185; W 509, p. 166; *W 618, p. 407; W 918, p. 145.
	1919	W 509, p. 166; W 618, p. 407.
	1920	W 509, p. 166; W 618, p. 407.
Virgin River at Littlefield, Ariz. (41)	1929	†W 689, p. 102.
	1930	*W 704, p. 66; W 979, p. 269.
	1931	*W 719, p. 68, W 979, p. 269.
	1932	*†W 734, p. 86; W 959, p. 272; W 979 p. 269.
	1933	*W 749, p. 74; W 979, p. 269.
	1934	*W 764, p. 113, W 979, p. 269.
	1935	*W 789, p. 128; W 979, p. 269.
	1936	*W 809, p. 138; W 979, p. 269.
	1937	*W 829, p. 150; W 979, p. 269.
	1938	W 859, p. 229.
White River near Rangely, Colo. (30)	1904	W 133, p. 99; *W 618, p. 422; W 918, p. 148.
(Published with records for White River near Watson, Utah, in this report.	1905	W 175, p. 56; W 618, p. 422.
Records for 1918 published also in report of State engineer of Colorado.)	1918	W 618, p. 422.
White River near Watson, Utah. (31)	1906	W 211, p. 50.
(Published as White River near Dragon, 1906.	1923-33	W 918, p. 148. Not previously published by Geological Survey.
Records for 1923-38 published also in reports of State engineer of Colorado.)	1934	W 764, p. 80.
	1935	W 789, p. 93.
	1936	W 809, p. 94.
	1937	W 829, p. 99.
See also White River near Rangely, Colo.	1938	W 859, p. 111.
Williams River at Planet, Ariz. (47)	1910	†W 289, p. 198.
(Published as Bill Williams River near Swansea, Ariz., 1910-12, and as Williams River near Swansea, Ariz., 1913-15.)	1911	†W 309, p. 227.
	1912	†W 329, p. 201.
	1913	W 359, p. 211; W 395, p. 112.
	1914	W 389, p. 147; W 395, p. 112.
	1915	W 409, p. 149.
	1916	†W 409, p. 149; W 918, p. 207. Discharge for October to December 1915 not previously published.
	1929	W 689, p. 64.
	1930	W 704, p. 69.
	1931	W 719, p. 70.
	1932	W 734, p. 88.
	1933	W 749, p. 77.
	1934	W 764, p. 116.
	1935	W 789, p. 131.
	1936	W 809, p. 141.
	1937	W 829, p. 152.
	1938	W 859, p. 231.
Yampa River near Maybell, Colo. (24)	1898	†A 20, pt. 4, p. 386; †W 28, p. 143, †W 74, p. 147.
(Records for 1916-38 published also in reports of State engineer of Colorado.)	1900	†A 22, pt. 4, p. 396; †W 50, p. 375.
	1904	W 133, p. 75; W 395, p. 52; W 618, p. 319.

No.	Date of publication	Water-Supply Papers--Continued
73	1903	Water storage on Salt River, Ariz., by A. P. Davis.
74	1902	Water resources of the State of Colorado, by A. L. Fellows.
81	1903	California hydrography, by J. B. Lippincott. Contains compiled records of lower Colorado River Basin.
93	1904	Proceedings of first conference of engineers of the Reclamation Service with accompanying papers, compiled by F. H. Newell, chief engineer. Contains descriptions and discussions of work in the Colorado River Basin.
147	1905	Destructive floods in the United States in 1904, by E. C. Murphy and others. Contains discussions of floods on 3 small tributaries in Arizona, Colorado, and New Mexico.
162	1906	Destructive floods in the United States in 1905, by E. C. Murphy and others. Contains discussions of spring and fall floods in various parts of the Colorado River Basin, particularly the lower Colorado and Gila Rivers, and gives an index to flood literature.
269	1911	Surface-water supply of the United States, Part 9, Colorado River Basin, 1909. Contains descriptions of floods in September 1909, in San Juan River, by W. B. Freeman, and in Zuni River, by H. F. Robinson.
274	1911	Some stream waters of the western United States, by Herman Stabler. Contains analyses showing suspended matter and dissolved solids found in the surface waters at about 15 sampling stations in the Colorado River Basin.
300	1913	Water resources of California, Part 3, by H. D. McGlashan and H. J. Dean. Contains stream-flow records of lower Colorado River and Salton Sea basins.
309	1914	Surface-water supply of the United States, Part 9, Colorado River Basin, 1911. Contains description of floods in October 1911 in the San Juan River Basin, by G. H. Russell and G. A. Gray.
380	1916	The Navajo country, by H. E. Gregory. Describes a remote plateau region of about 25,000 square miles lying south of the Colorado and San Juan rivers.
395	1916	Colorado River and its utilization, by E. C. La Rue.
469	1923	Surface waters of Wyoming and their utilization, by Robert Follansbee.
497	1923	The Salton Sea region, Calif., by J. S. Brown. Describes the region of the Salton Basin and vicinity west of the Colorado River.
498	1923	The lower Gila region, Ariz., by C. P. Ross. Describes the Gila River valley west of Phoenix and the region to the north as far as Parker.
499	1925	The Papago country, Ariz., by Kirk Bryan. Describes the region south of the Gila River and west of Tucson.
538	1924	The San Juan canyon, southeastern Utah, by H. D. Miser. Describes the region of the San Juan River downstream from Bluff.
556	1925	Water power and flood control of Colorado River below Green River, Utah, by E. C. La Rue.
578	1929	The Mohave Desert region, Calif., by D. G. Thompson. Includes description of the region west of the Colorado River extending from the Salton Sea region to the head of Mohave Valley, and of the Colorado River valley in Arizona north of the lower Gila region.
596-B	1928	Quality of water of Colorado River in 1925-26, by W. D. Collins and C. S. Howard.
617	1929	Upper Colorado River and its utilization, by Robert Follansbee.
618	1930	The Green River and its utilization, by Ralf R. Woolley.
636-A	1930	Quality of water of the Colorado River in 1926-28, by C. S. Howard.
636-B	1930	Suspended matter in the Colorado River in 1925-28, by C. S. Howard.
638-D	1932	Quality of water of the Colorado River in 1928-30, by C. S. Howard.
771	1936	Floods in the United States, magnitude and frequency, by C. S. Jarvis and others. Includes records at 6 stations in Colorado River Basin. Compiled from previously published records.
847	1940	Maximum discharges at stream measurement stations, through Sept. 30, 1938, by Williams, Crawford, and Eisenlohr. Compiled from previously published records.
879	1940	Surface water supply of Colorado River Basin, 1939. Appendix contains summaries of figures of yearly discharge and runoff for certain gaging stations in the Colorado River Basin, previously published in the annual series of water-supply papers.

RECORDS AT BASE STATIONS IN COLORADO RIVER BASIN, 1891-1938

RECORDS OF STREAM FLOW

COLORADO RIVER AT HOT SULPHUR SPRINGS, COLO.[a]

Location.- Lat. 40°05', long. 106°05', in sec. 1, T. 1 N., R. 78 W., 1 mile east of Hot Sulphur Springs, and 3 miles upstream from Beaver Creek, since Sept. 19, 1930.
1904-6: In sec. 3, T. 1 N., R. 78 W., at wagon road bridge one-eighth of a mile west of Hot Sulphur Springs.
1906-30: In sec. 2, T. 1 N., R. 78 W., at highway bridge at Hot Sulphur Springs, one-eighth of a mile upstream from former site, and 1 mile downstream from present site.

Drainage area.- 782 square miles.

Records available.- July 1904 to September 1909, September 1910 to October 1924, and October 1925 to September 1938.

Average discharge.- 32 years (water years, 1905-9, 1911-24, 1926-38), 720 second-feet.

Extremes.- 1904-9, 1910-24, 1925-38: Maximum discharge observed, 10,300 second-feet June 15, 1921 (gage height, 8.7 feet); minimum daily discharge determined, 36 second-feet, Dec. 30, 31, 1931.

Gage.- Water-stage recorder 1 mile upstream from Hot Sulphur Springs since Sept. 19, 1930. Former chain gage at highway bridge at Hot Sulphur Springs and temporary staff gages in canyon downstream where ice conditions are less severe are used to supplement gages at recorder site during winter.
July 27, 1904, to Apr. 16, 1906, vertical staff gage on downstream end of masonry pier of wagon road bridge one-eighth of a mile downstream from Hot Sulphur Springs.
Apr. 16, 1906, staff gage installed on pier of new highway bridge at Hot Sulphur Springs. May 22, 1906, standard wire and weight gage installed on same bridge. September 1910, chain gage replaced wire gage at same site.
Elevations above sea level and relations between the several gages not determined.

Cooperation.- Gage heights furnished by U. S. Forest Service 1910-18. Records collected in collaboration with State engineer, 1910-11, 1928-28, and 1934-38, who also furnished entire record of daily discharge, 1929-33.

Remarks.- For open-water seasons, records prior to 1914 are fair; for subsequent years, good; and since 1934, excellent. For winter seasons, generally December to March, records are fair; and since 1934, good. They were estimated or computed from a few discharge measurements each winter, from readings on temporary staff gages at open sections in the canyon downstream, from weather records, and from comparison with records at related stations. Prior to installation of the water-stage recorder, gages were read twice a day to hundredths beginning in 1914, generally once a day to half-tenths 1904-9, and less frequently 1910-13. Diversions for irrigation above station. Transmountain diversions from Colorado River Basin above station to South Platte River Basin have been accomplished by Grand River ditch since about 1903, by Berthoud ditch since 1909, and through pioneer bore of Moffat tunnel since June 9, 1936. During water year 1938, about 60,000 acre-feet were thus diverted. Colorado-Big Thompson project for similar diversion is under construction.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
July 28-31, 1904	1,010	930	970	3,880	7,700
August	995	‡501	685	21,245	42,140
September	1,030	313	491	14,720	29,200
October 1904	364	245	320	9,908	19,650
November	-	-	*150	4,500	8,930
December	-	-	*100	3,100	6,150
January 1905	-	-	*100	3,100	6,150
February	-	-	*105	2,940	5,830
March	-	-	*130	4,030	7,990
April	1,040	200	550	16,504	32,740
May	3,260	736	1,785	55,337	109,800
June	5,600	3,240	4,137	124,096	246,100
July	2,860	632	1,265	39,205	77,760
August	750	174	410	12,711	25,210
September	210	95	164	4,913	9,740
Water year 1905	5,600	-	768	280,344	556,000
October 1905	210	180	186	5,781	11,470
November	210	-	*140	4,200	8,330
December	-	-	*105	3,255	6,460
Calendar year 1905	5,600	-	756	276,082	547,600
January 1906	-	-	*100	3,100	6,150
February	-	-	*110	3,080	6,110
March	-	-	*175	5,425	10,760
April	1,480	234	691	20,732	41,120
May	3,700	648	2,159	66,919	132,700
June	5,350	2,020	3,213	96,390	191,200
July	2,650	715	1,532	47,505	94,220
August	750	316	491	15,226	30,200
September	750	240	457	13,704	27,180
Water year 1906	5,350	-	‡782	285,317	565,900

a Published as at Sulphur Springs, 1907-13.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1906	490	240	338	10,473	20,770
November	289	-	*180	5,400	10,710
December	-	-	*155	4,805	9,530
Calendar year 1906	5,350	-	802	292,759	580,600
January 1907	-	-	*125	3,875	7,690
February	-	-	*150	4,200	8,330
March	(a)	-	*300	9,300	18,450
April	1,990	375	863	25,891	51,350
May	4,030	667	1,714	53,129	105,400
June	5,430	1,770	4,393	131,780	261,400
July	4,670	1,520	2,749	85,216	169,000
August	1,340	391	701	21,736	43,110
September	411	150	246	7,391	14,660
Water year 1907	5,430	-	995	363,190	720,400
October 1907	443	134	288	8,939	17,730
November	-	-	*135	4,050	8,030
December	-	-	*75	2,325	4,610
Calendar year 1907	5,430	-	980	357,826	709,800
January 1908	-	-	99	†3,076	6,100
February	93	63	74	2,132	4,230
March	528	72	‡199	6,155	12,210
April	648	421	529	15,858	31,450
May	1,290	473	805	24,943	49,470
June	2,630	1,060	1,879	56,380	111,800
July	1,210	421	819	25,390	50,360
August	846	345	553	17,131	33,980
September	320	150	220	6,605	13,100
Water year 1908	2,630	63	473	172,984	343,100
October 1908	206	134	166	5,153	10,220
November	150	92	‡124	†3,706	†7,350
December	120	99	‡109	†3,372	‡6,690
Calendar year 1908	2,630	63	‡464	169,901	337,000
January 1909	-	-	*110	3,410	6,760
February	-	-	*105	2,940	5,830
March	-	-	*145	4,495	8,920
April	729	271	475	14,240	28,240
May	2,930	401	1,533	47,521	94,260
June	6,420	1,230	4,950	148,500	294,500
July	5,350	1,060	2,560	79,350	157,400
August	1,040	472	735	22,791	45,210
September	555	340	441	13,244	26,270
Water year 1909	6,420	-	‡955	348,722	691,600
September 17-30, 1910	388	235	306	4,282	8,490
October 1910	b220	b170	196	6,063	12,030
November	-	-	148	†4,455	8,840
December	-	-	*125	3,875	7,690
January 1911	-	-	*100	3,100	6,150
February	-	-	*100	2,800	5,550
March	-	-	*120	3,720	7,380
April	-	-	318	†9,540	18,920
May	-	-	1,890	†58,590	116,200
June	-	-	3,240	†97,200	192,800
July	-	-	1,300	†40,300	79,930
August	-	-	390	†12,090	23,980
September	-	-	*300	9,000	17,850
Water year 1911	-	-	687	250,733	497,300
October 1911	-	-	286	†8,866	17,590
November	-	-	*175	5,250	10,410
December	-	-	*125	3,875	7,690
Calendar year 1911	-	-	697	254,331	504,400
January 1912	-	-	*110	3,410	6,760
February	-	-	*105	3,045	6,040
March	-	-	*120	3,720	7,380
April	-	-	*300	9,000	17,850
May	-	-	1,800	†55,800	110,700
June	-	-	4,440	†133,200	264,200
July	-	-	2,430	†75,330	149,400
August	-	-	869	†26,939	53,430
September	-	-	*350	10,500	20,830
Water year 1912	-	-	‡926	338,935	672,300

a Previously published figure discarded.
b Not previously published.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1912	-	-	*250	7,750	15,370
November	-	-	*150	4,500	8,930
December	-	-	*135	4,185	8,300
Calendar year 1912	-	-	922	337,379	669,200
January 1913	-	-	*130	4,030	7,990
February	-	-	*120	3,360	6,660
March	-	-	*125	3,875	7,690
April	-	-	*500	15,000	29,750
May	3,900	-	1,840	†57,040	113,100
June	3,760	1,190	1,971	†59,120	117,300
July	1,250	550	877	†27,175	53,900
August	472	246	324	†10,049	19,930
September	400	246	307	†9,201	18,250
Water year 1913	-	-	‡562	205,285	407,200
October 1913	378	246	311	†9,647	19,130
November	280	200	230	†6,889	13,660
December	-	-	*120	3,720	7,380
Calendar year 1913	-	-	573	209,106	414,700
January 1914	-	-	*120	3,720	7,380
February	-	-	*125	3,500	6,940
March	-	-	*175	5,425	10,760
April	1,280	(a)	610	†18,300	36,300
May	6,330	790	3,216	99,705	197,800
June	8,000	2,420	4,780	143,410	284,400
July	2,550	790	1,427	44,238	87,740
August	1,020	349	506	15,673	31,090
September	391	227	288	8,651	17,160
Water year 1914	8,000	-	c994	362,878	c719,700
October 1914	317	230	268	8,297	16,460
November	246	90	150	4,505	8,940
December	-	-	*80	2,480	4,920
Calendar year 1914	8,000	-	981	357,904	709,900
January 1915	-	-	*80	2,480	4,920
February	-	-	*85	2,380	4,720
March	-	-	*125	3,875	7,690
April	1,280	298	559	16,763	33,250
May	1,600	400	984	30,497	60,490
June	3,980	1,190	2,684	80,530	159,700
July	2,550	497	1,368	42,409	84,120
August	606	230	378	11,728	23,260
September	357	174	259	7,781	15,430
Water year 1915	3,980	-	586	213,725	423,900
October 1915	357	172	237	7,334	14,550
November	190	125	140	†4,200	8,330
December	-	-	*105	3,255	6,460
Calendar year 1915	3,980	-	584	213,232	422,900
January 1916	-	-	*115	3,565	7,070
February	144	103	119	†3,440	6,820
March	735	105	232	†7,197	14,280
April	1,700	165	530	15,909	31,560
May	3,460	772	1,829	56,687	112,400
June	3,310	1,940	2,706	81,190	161,000
July	1,820	497	930	28,834	57,190
August	735	298	483	14,971	29,690
September	472	246	326	9,788	19,410
Water year 1916	3,460	-	‡646	236,370	468,800
October 1916	409	246	297	9,218	18,280
November	280	125	192	5,758	11,420
December	-	-	*125	3,875	7,690
Calendar year 1916	3,460	-	657	240,432	476,800
January 1917	-	-	*125	3,875	7,690
February	-	-	*125	3,500	‡6,940
March	-	-	*125	3,875	7,690
April	1,160	280	578	17,341	34,400
May	3,610	378	1,381	42,823	84,940
June	6,870	1,360	4,728	141,850	281,400
July	5,770	1,160	2,695	83,550	165,700
August	1,160	337	548	16,990	33,700
September	337	202	257	7,714	15,300
Water year 1917	6,870	-	‡933	340,369	675,200

a Previously published figure discarded.
c Revised.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1917	234	148	178	5,531	10,970
November	172	138	154	†4,615	9,150
December	163	121	135	†4,182	8,290
Calendar year 1917	6,870	-	920	335,846	666,200
January 1918	-	-	c115	d3,564	7,070
February	-	-	115	d3,233	6,410
March	-	-	114	d3,531	7,000
April	665	141	333	†9,980	19,800
May	4,060	424	2,292	71,037	140,900
June	8,580	2,600	5,142	154,250	306,000
July	2,400	550	1,380	42,778	84,850
August	635	200	371	11,504	22,820
September	337	210	271	8,121	16,110
Water year 1918	8,580	-	883	322,326	639,400
October 1918	424	240	329	10,188	20,210
November	310	118	201	†6,034	11,970
December	-	-	122	d3,773	7,480
Calendar year 1918	8,580	-	899	327,993	650,600
January 1919	-	-	106	d3,277	6,500
February	-	-	101	d2,827	5,610
March	-	-	125	d3,869	7,670
April	1,240	158	505	15,162	30,070
May	3,400	780	1,859	57,620	114,300
June	2,390	1,020	1,514	45,430	90,110
July	940	292	547	16,961	33,640
August	940	167	327	10,132	20,100
September	350	181	217	6,524	12,940
Water year 1919	3,400	-	498	181,797	360,600
October 1919	205	158	176	5,469	10,850
November	202	83	125	d3,761	7,460
December	114	81	92	d2,855	5,660
Calendar year 1919	3,400	-	476	173,887	344,900
January 1920	-	-	97	d3,017	5,980
February	-	-	105	d3,046	6,040
March	-	-	342	d10,608	21,040
April	1,290	225	653	19,580	38,840
May	5,580	254	2,939	91,124	180,700
June	6,660	3,250	4,371	131,140	260,100
July	3,550	670	1,564	48,490	96,180
August	940	418	625	19,373	38,430
September	c465	264	348	10,438	20,700
Water year 1920	6,660	-	‡953	348,901	692,000
October 1920	310	181	236	7,314	14,510
November	192	127	162	†4,851	9,620
December	-	-	*153	4,739	9,400
Calendar year 1920	6,660	-	966	353,720	701,500
January 1921	-	-	*133	4,137	8,210
February	-	-	*111	3,108	6,160
March	-	-	*118	3,658	7,260
April	565	141	405	12,147	24,090
May	5,400	740	2,395	74,260	147,300
June	9,280	2,310	5,616	168,470	334,200
July	2,020	822	1,294	40,119	79,570
August	822	540	615	19,071	37,830
September	-	-	*330	9,900	19,640
Water year 1921	9,280	(a)	964	351,774	697,800
October 1921	358	180	232	7,177	14,240
November	170	-	‡124	†3,723	7,380
December	-	-	126	e3,914	7,760
Calendar year 1921	9,280	-	958	349,684	693,600
January 1922	-	-	126	e3,913	7,760
February	-	-	112	e3,146	6,240
March	-	-	131	e4,048	8,030
April	690	-	309	†9,275	18,400
May	3,410	690	1,586	49,155	97,500
June	3,560	1,300	2,274	68,220	135,300
July	1,240	358	651	20,185	40,040
August	491	272	354	10,984	21,790
September	358	109	183	5,498	10,910
Water year 1922	3,560	-	‡518	189,238	375,400

a Previously published figure discarded.
c Revised.
d Daily discharge estimated.
e Estimated for successive short periods.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1922	132	95	110	3,398	6,740
November	(a)	(a)	c*100	3,000	5,950
December	-	-	*100	3,100	6,150
Calendar year 1922	3,560	-	504	183,922	364,800
January 1923	-	-	*95	2,945	5,840
February	-	-	*95	2,660	5,280
March	-	-	*100	3,100	6,150
April	778	(a)	330	†9,900	c19,640
May	3,640	834	1,821	56,440	111,900
June	6,220	2,530	3,676	110,280	218,700
July	2,360	740	1,580	48,985	97,160
August	905	294	578	17,929	35,560
September	423	200	326	9,765	19,370
Water year 1923	6,220	-	744	271,502	538,400
October 1923	414	148	282	8,756	17,370
November	259	-	120	†3,600	7,140
December	-	-	*111	3,441	6,830
Calendar year 1923	6,220	-	761	277,801	550,900
January 1924	-	-	*107	3,317	6,580
February	-	-	*100	2,900	5,750
March	-	-	*137	4,247	8,420
April	-	-	*390	11,700	23,210
May	3,000	-	2,050	†63,550	126,000
June	8,310	1,590	3,779	113,380	224,900
July	2,020	336	1,022	31,680	62,840
August	615	117	182	5,647	11,200
September	‡132	100	106	3,183	6,310
Water year 1924	8,310	-	698	255,401	506,600
October 1924	436	100	203	6,300	12,500
October 1925	471	275	371	†11,504	22,820
November	292	-	190	†5,714	11,330
December	-	-	*135	4,185	8,300
January 1926	-	-	*125	3,875	7,690
February	-	-	*120	3,360	6,660
March	-	-	*160	4,960	9,840
April	-	-	*795	23,850	47,310
May	5,080	1,090	2,602	80,660	160,000
June	5,910	2,080	3,873	116,180	230,400
July	2,930	838	1,739	53,918	106,900
August	856	263	519	16,096	31,930
September	310	149	219	6,559	13,010
Water year 1926	5,910	-	‡906	330,861	656,200
October 1926	292	125	187	5,803	11,510
November	231	-	166	†4,967	9,850
December	-	-	*138	4,278	8,490
Calendar year 1926	5,910	-	889	324,506	643,600
January 1927	-	-	*100	3,100	6,150
February	-	-	*95	2,660	5,280
March	-	-	*126	3,906	7,750
April	1,530	223	498	†14,930	29,610
May	4,450	1,600	2,676	82,950	164,500
June	3,610	1,970	2,733	81,990	162,600
July	1,870	605	1,051	32,567	64,600
August	883	368	550	17,059	33,840
September	381	204	286	8,594	17,050
Water year 1927	4,450	-	720	262,804	521,200
October 1927	397	245	293	9,090	18,030
November	343	-	245	†7,350	14,580
December	-	-	*220	6,820	13,530
Calendar year 1927	4,450	-	743	271,016	537,500
January 1928	-	-	*150	4,650	9,220
February	-	-	*130	3,770	7,480
March	-	-	*160	4,960	9,840
April	1,260	-	412	†12,349	24,490
May	6,660	1,380	2,886	89,460	177,400
June	6,060	2,040	3,031	90,920	180,300
July	3,210	825	1,702	52,760	104,600
August	710	237	414	12,834	25,460
September	261	153	195	5,862	11,630
Water year 1928	6,660	-	822	300,825	596,600

a Previously published figure discarded.
c Revised.

Note.- Estimates of winter discharge, 1923-24, and resulting yearly discharge not previously published.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	223	175	202	6,266	12,430
November	242	123	163	4,888	9,700
December	-	-	*105	3,255	6,460
Calendar year 1928	6,660	-	798	291,974	579,000
January 1929	-	-	*95	2,945	5,840
February	-	-	*92	2,576	5,110
March	-	-	*115	3,565	7,070
April	-	-	*410	12,300	24,400
May	-	-	*2,200	68,200	135,300
June	4,420	2,440	3,180	95,410	189,200
July	2,580	947	1,464	45,371	90,000
August	1,360	391	682	21,148	41,950
September	980	367	563	16,888	33,500
Water year 1929	4,420	-	775	282,812	561,000
October 1929	540	223	338	10,490	20,810
November	-	-	*160	4,800	9,520
December	-	-	*150	4,650	9,220
Calendar year 1929	4,420	-	790	288,343	571,900
January 1930	-	-	*110	3,410	6,760
February	-	-	*115	3,220	6,390
March	-	-	*125	3,875	7,690
April	1,700	-	978	†29,332	58,180
May	3,570	746	1,454	45,084	89,420
June	3,370	1,280	2,296	68,870	136,600
July	1,140	523	755	23,414	46,440
August	2,220	430	807	25,014	49,610
September	470	236	336	10,072	19,980
Water year 1930	3,570	-	636	232,231	460,600
October 1930	325	184	274	8,495	16,850
November	198	-	*159	4,770	9,460
December	-	-	*68	2,108	4,180
Calendar year 1930	3,570	-	624	227,664	451,600
January 1931	76	41	62	1,922	3,810
February	87	55	70.6	1,976	3,920
March	92	65	75.4	2,337	4,640
April	686	69	296	8,885	17,620
May	2,130	452	1,052	32,621	64,700
June	3,020	1,850	2,387	71,610	142,000
July	1,690	246	562	17,427	34,570
August	764	210	323	9,999	19,830
September	375	172	214	6,431	12,760
Water year 1931	3,020	41	462	168,581	334,300
October 1931	240	174	196	6,064	12,030
November	192	90	155	4,659	9,240
December	80	36	56.0	1,737	3,450
Calendar year 1931	3,020	36	454	165,668	328,600
January 1932	128	44	90.7	2,813	5,580
February	100	84	93.7	2,717	5,390
March	116	72	89.4	2,770	5,490
April	1,510	110	516	15,485	30,710
May	3,690	583	2,093	64,874	128,700
June	3,010	2,220	2,587	77,600	153,900
July	2,290	505	1,227	38,040	75,450
August	688	260	351	10,896	21,610
September	264	150	183	5,490	10,890
Water year 1932	3,690	36	637	233,145	462,400
October 1932	184	138	160	4,957	9,830
November	168	126	148	4,440	8,810
December	190	38	91.4	2,833	5,620
Calendar year 1932	3,690	38	636	232,915	462,000
January 1933	77	59	67.5	2,092	4,150
February	91	71	78.8	2,207	4,380
March	230	86	107	3,324	6,590
April	690	115	264	7,923	15,720
May	3,500	290	1,155	35,799	71,010
June	5,350	2,230	4,012	120,350	238,700
July	2,180	376	1,096	33,975	67,390
August	514	224	308	9,539	18,920
September	418	174	247	7,424	14,730
Water year 1933	5,350	38	643	234,863	465,800

Note.- No yearly discharge previously published for 1929-33.

Monthly summary of discharge of Colorado River at Hot Sulphur Springs, Colo., 1904-9, 1910-24, 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	277	141	190	5,898	11,700
November	162	121	141	4,223	8,380
December	132	-	105	13,251	6,450
Calendar year 1933	5,350	59	647	236,005	468,100
January 1934	-	-	*85	2,635	5,230
February	-	-	*100	2,800	5,550
March	263	-	136	14,231	8,390
April	915	182	451	13,530	26,840
May	2,170	872	1,665	51,607	102,400
June	1,940	303	795	23,862	47,330
July	374	152	214	6,640	13,170
August	210	138	173	5,350	10,610
September	185	114	143	4,282	8,490
Water year 1934	2,170	-	352	128,309	254,500
October 1934	166	88	114	3,528	7,000
November	139	94	116	3,467	6,880
December	106	79	87.2	2,703	5,360
Calendar year 1934	2,170	-	341	124,635	247,200
January 1935	88	76	84.4	2,615	5,190
February	91	79	84.1	2,355	4,670
March	132	82	97.8	3,031	6,010
April	383	139	253	7,596	15,070
May	2,090	266	766	23,747	47,100
June	5,370	1,540	3,074	92,230	182,900
July	2,270	629	1,319	40,893	81,110
August	622	266	373	11,564	22,940
September	330	149	219	6,574	13,040
Wate year 1935	5,370	76	549	200,303	397,300
October 1935	202	142	165	5,121	10,160
November	173	116	141	4,238	8,410
December	119	97	103	3,206	6,360
Calendar year 1935	5,370	76	557	203,170	403,000
January 1936	106	97	102	3,176	6,300
February	103	91	96.3	2,793	5,540
March	132	106	118	3,667	7,270
April	2,340	122	1,104	33,129	65,710
May	4,100	1,600	3,031	93,950	186,300
June	4,180	1,550	2,524	75,730	150,200
July	2,210	552	895	27,744	55,030
August	1,080	271	555	17,199	34,110
September	344	180	237	7,103	14,090
Water year 1936	4,180	91	757	277,056	549,500
October 1936	264	198	232	7,190	14,260
November	212	131	159	4,759	9,440
December	144	87	111	3,439	6,820
Calendar year 1936	4,180	87	765	279,879	555,100
January 1937	107	77	85.5	2,652	5,260
February	98	81	90.2	2,527	5,010
March	107	90	98.7	3,060	6,070
April	716	113	387	11,612	23,030
May	2,420	376	1,520	47,102	93,430
June	2,060	970	1,420	42,600	84,500
July	1,280	376	690	21,386	42,420
August	427	230	289	8,956	17,760
September	292	163	213	6,384	12,660
Water year 1937	2,420	77	443	161,667	320,700
October 1937	304	187	241	7,463	14,800
November	256	156	209	6,268	12,430
December	220	115	165	5,125	10,170
Calendar year 1937	2,420	77	452	165,135	327,500
January 1938	145	110	120	3,715	7,370
February	110	92	103	2,873	5,700
March	260	100	154	4,762	9,450
April	1,950	245	730	21,897	43,430
May	4,890	846	2,304	71,412	141,600
June	4,570	2,740	3,536	106,080	210,400
July	2,570	445	1,063	32,939	65,330
August	425	204	310	9,601	19,040
September	700	215	389	11,684	23,170
Water year 1938	4,890	92	778	283,819	562,900

Yearly discharge of Colorado River at Hot Sulphur Springs, Colo., 1905-9, 1911-24, 1926-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1905	768	556,000	756	547,600
1906	‡782	565,900	802	580,600
1907	995	720,400	980	709,800
1908	473	343,100	‡464	337,000
1909	‡955	691,600	-	-
1911	687	497,300	697	504,400
1912	‡926	672,300	922	669,200
1913	‡562	407,200	573	414,700
1914	a994	a719,700	981	709,900
1915	586	423,900	584	422,900
1916	‡646	468,800	657	476,800
1917	‡933	675,200	920	666,200
1918	883	639,400	899	650,600
1919	498	360,800	476	344,900
1920	‡953	692,000	966	701,500
1921	964	697,800	958	693,600
1922	‡518	375,400	504	364,800
1923	744	538,400	761	550,900
1924	698	506,600	-	-
1926	‡906	656,200	889	643,600
1927	720	521,200	743	537,500
1928	822	596,600	798	579,000
1929	775	561,000	790	571,900
1930	636	460,600	624	451,600
1931	462	334,300	454	328,600
1932	637	462,400	636	462,000
1933	643	465,800	647	468,100
1934	352	254,500	341	247,200
1935	549	397,300	557	403,000
1936	757	549,500	765	555,100
1937	443	320,700	452	327,500
1938	778	562,900	-	-

a Revised.

COLORADO RIVER NEAR KREMMLING, COLO.

Location.- Lat. 40°02', long. 106°27', in sec. 23, T. 1 N., R. 81 W., at upstream end of Gore Canyon, 3 miles southwest of Kremmling (5 miles downstream), and 4 miles downstream from Blue River.

Drainage area.- 2,360 square miles.

Records available.- July 1904 to September 1918.

Average discharge.- 14 years (water years, 1905-18), 1,841 second-feet.

Extremes.- 1904-18: Maximum discharge observed, 21,500 second-feet on June 7, 1912 (gage height, 21.8 feet); minimum observed, 166 second-feet on Dec. 19, 1907 (gage height, -0.02 foot).

Gage.- July 24, 1904, to Oct. 17, 1906, wire-weight and chain gages on left bank 300 feet upstream from wagon road bridge, supplemented by temporary staff gages in 1906. Gages read twice daily to hundredths or half-tenths. Some uncertainties of gage datum in 1906.

Oct. 18, 1906, to July 27, 1910, inclined staff gage on right bank directly opposite former chain gage and at datum 0.80 foot higher. Gage read twice daily, probably to hundredths.

July 28, 1910, to Oct. 14, 1915, water-stage recorder near preceding staff gage and at same datum, used during open-water seasons; staff gage used during winter.

Oct. 15, 1915, to Sept. 30, 1918, water-stage recorder on right bank 100 feet downstream and at same datum, supplemented in winter by same staff gage.

Zero of gage on May 27, 1907, was at elevation, 7,301.32 feet above mean sea level, from benchmark of Denver Northwestern and Pacific Railway.

Cooperation.- Records for 1912 furnished by State engineer who also cooperated in maintenance of station 1910-18.

Remarks.- Records good except for winter seasons, generally December to March, for which they are fair. Estimated records fair. River frozen over at gage each winter but generally open on rapids forming principal control, resulting in only moderate backwater from ice, and permitting computation of discharge daily or for successive short periods during many winter months. Estimated records computed from comparison with flow of Colorado River at Glenwood Springs. During 1906-8 there was some uncertainty of gage heights. Diversions for irrigation above station.

This station was about a mile upstream from dam site of contemplated Kremmling reservoir (capacity, about 2,000,000 acre-feet). Green Mountain Dam (reservoir capacity, about 150,000 acre-feet) on Blue River about 14 miles southeast of Kremmling under construction in 1939.

Monthly summary of discharge of Colorado River near Kremmling, Colo., 1904-18

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
July 24-31, 1904	2,010	1,590	1,765	14,118	28,000
August	1,800	1,010	1,308	40,533	80,400
September	1,820	662	893	26,781	53,120
October 1904	790	‡530	646	20,012	39,690
November	554	(a)	‡460	†13,787	b27,350
December	-	-	*312	9,672	19,180
January 1905	402	287	314	9,733	19,310
February	340	282	316	8,853	17,560
March	550	332	390	12,093	23,990
April	1,980	426	924	27,708	54,960
May	6,430	1,660	3,523	109,202	216,600
June	11,800	4,850	7,999	239,963	476,000
July	4,340	1,340	2,046	63,427	125,800
August	1,390	617	866	26,838	53,230
September	800	436	532	15,970	31,680
Water year 1905	11,800	282	1,527	557,258	1,105,000
October 1905	520	368	475	14,720	29,200
November	532	272	419	12,558	24,910
December	515	228	325	10,076	19,990
Calendar year 1905	11,800	228	1,510	551,141	1,093,000
January 1906	-	-	*305	9,455	18,750
February	-	-	*342	9,576	18,990
March	-	-	*525	16,275	32,280
April	3,020	725	1,437	43,103	85,490
May	8,350	1,430	5,059	156,830	311,100
June	11,600	4,440	7,078	212,330	421,200
July	4,710	1,820	3,286	101,860	202,000
August	1,990	960	1,405	43,546	86,370
September	1,680	785	1,157	34,703	68,830
Water year 1906	11,600	228	1,822	665,032	1,319,000

a Previously published figure discarded.
b Revised.

Monthly summary of discharge of Colorado River near Kremmling, Colo., 1904-18--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1906	1,140	565	817	25,322	50,230
November	755	405	546	16,394	32,520
December	565	(a)	477	†14,773	29,300
Calendar year 1906	11,600	-	1,874	684,167	1,357,000
January 1907	-	-	*377	11,687	23,180
February	-	-	*375	10,500	20,830
March	2,520	335	874	27,089	53,730
April	3,010	734	1,691	50,732	100,600
May	8,210	1,420	3,683	114,160	226,400
June	11,700	4,040	9,174	275,220	545,900
July	11,400	3,120	6,222	192,890	382,600
August	2,810	1,140	1,703	52,800	104,700
September	1,140	585	784	23,534	46,680
Water year 1907	11,700	-	‡2,233	815,101	1,617,000
October 1907	1,100	540	719	22,295	44,220
November	590	220	407	12,198	24,190
December	(a)	166	259	†8,014	15,900
Calendar year 1907	11,700	166	2,195	801,119	1,589,000
January 1908	350	‡275	304	†9,412	18,670
February	‡350	265	306	8,880	17,610
March	740	265	419	12,988	25,760
April	2,300	415	1,285	38,562	76,490
May	3,650	1,170	2,388	74,030	146,800
June	6,510	3,120	4,715	141,450	280,600
July	3,150	1,170	2,010	62,320	123,600
August	2,220	815	1,312	40,672	80,670
September	755	465	597	17,919	35,540
Water year 1908	6,510	166	1,226	448,740	890,000
October 1908	540	415	488	15,115	29,980
November	502	260	390	11,686	23,180
December	-	250	303	†9,388	18,620
Calendar year 1908	6,510	250	1,209	442,422	877,500
January 1909	-	-	*382	11,842	23,490
February	-	-	*329	9,212	18,270
March	-	-	*429	13,299	26,380
April	1,680	490	864	25,918	51,410
May	6,860	978	4,036	125,128	248,200
June	15,300	4,960	11,670	350,050	694,300
July	11,500	2,020	5,269	163,330	324,000
August	3,120	1,380	1,887	58,510	116,100
September	2,280	908	1,409	42,273	83,850
Water year 1909	15,300	250	2,290	835,751	1,658,000
October 1909	908	528	739	22,902	45,430
November	680	365	533	15,998	31,730
December	515	302	437	†13,538	26,850
Calendar year 1909	15,300	302	2,334	852,000	1,690,000
January 1910	-	-	*420	13,020	25,820
February	-	-	*360	10,080	19,990
March	1,480	(a)	905	†28,047	55,630
April	4,020	800	1,617	48,503	96,200
May	7,280	2,440	3,597	111,500	221,200
June	7,600	1,990	4,006	120,180	238,400
July	2,420	710	1,274	39,479	78,310
August	1,440	502	784	24,310	b48,220
September	960	478	706	21,185	42,020
Water year 1910	7,600	302	1,284	468,742	929,800
October 1910	578	‡465	513	15,916	31,570
November	490	377	435	13,052	25,890
December	-	-	*366	11,346	22,500
Calendar year 1910	7,600	-	1,251	456,618	905,800
January 1911	650	330	426	13,208	26,200
February	590	350	405	11,348	22,510
March	635	380	525	16,278	32,290
April	2,550	620	1,152	34,550	68,530
May	6,550	1,800	4,445	137,800	273,300
June	8,350	3,200	6,372	191,150	379,100
July	5,850	1,480	2,931	90,850	180,200
August	1,680	950	1,183	36,675	72,740
September	965	695	804	24,120	47,840
Water year 1911	8,350	-	1,634	596,293	1,183,000

a Previously published figure discarded.
b Revised.

Monthly summary of discharge of Colorado River near Kremmling, Colo., 1904-18--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1911	1,340	578	863	26,763	53,080
November	755	340	562	16,861	33,440
December	502	340	393	12,168	24,130
Calendar year 1911	8,350	330	1,676	611,771	1,213,000
January 1912	-	-	*434	13,454	26,690
February	-	-	b*425	12,325	24,450
March	-	-	*465	14,415	28,590
April	1,240	718	894	†26,826	53,210
May	11,000	1,420	4,444	137,770	273,300
June	*21,000	5,000	11,360	†340,910	676,200
July	11,300	4,220	6,045	187,390	371,700
August	4,780	1,180	2,068	†64,120	127,200
September	1,200	900	‡1,032	30,966	61,420
Water year 1912	*21,000	340	b2,415	883,968	1,753,000
October 1912	988	785	908	28,162	55,860
November	880	672	734	22,030	43,700
December	-	-	*446	13,826	27,420
Calendar year 1912	21,000	-	2,438	892,194	1,770,000
January 1913	-	-	*421	13,051	25,890
February	-	-	*321	8,988	17,830
March	-	-	*388	12,028	23,860
April	-	-	e1,850	55,500	110,100
May	7,610	-	4,160	†128,970	255,800
June	7,730	3,020	4,607	138,210	274,100
July	2,720	1,290	1,971	61,090	121,200
August	1,250	812	949	29,431	58,380
September	1,170	782	918	27,529	54,600
Water year 1913	7,730	-	1,476	538,815	1,069,000
October 1913	1,050	622	822	25,494	50,570
November	752	461	653	19,593	38,860
December	-	-	*375	11,625	23,060
Calendar year 1913	7,730	-	1,456	531,509	1,054,000
January 1914	487	313	374	†11,606	23,020
February	474	301	447	†12,520	24,830
March	875	461	545	†16,881	33,480
April	2,420	843	1,521	45,644	90,530
May	13,700	2,100	7,324	227,030	450,300
June	16,300	5,500	10,540	316,090	627,000
July	5,290	2,370	3,449	106,920	212,100
August	3,080	1,160	1,580	48,970	97,130
September	1,190	707	871	26,124	51,820
Water year 1914	16,300	301	2,379	868,497	1,723,000
October 1914	940	739	802	24,873	49,330
November	707	375	511	15,341	30,430
December	342	160	255	†7,893	15,660
Calendar year 1914	16,300	180	2,356	859,892	1,706,000
January 1915	268	192	241	7,463	14,800
February	330	218	279	7,815	15,500
March	635	268	372	11,538	22,890
April	2,820	650	1,416	42,494	84,290
May	3,900	1,280	2,620	81,210	161,100
June	8,110	3,330	5,638	169,140	335,500
July	4,990	1,240	2,799	86,760	172,100
August	1,680	680	964	29,870	59,250
September	910	500	673	20,180	40,030
Water year 1915	8,110	180	1,382	504,577	1,001,000
October 1915	858	545	672	20,847	41,350
November	560	230	439	13,170	26,120
December	450	200	329	†10,184	20,200
Calendar year 1915	8,110	192	1,372	500,671	993,100
January 1916	460	285	353	†10,947	21,710
February	378	290	332	9,637	19,110
March	1,330	328	646	20,014	39,700
April	3,570	570	1,362	40,875	81,070
May	7,120	2,130	4,085	126,620	251,100
June	*8,100	4,760	6,377	†191,310	379,500
July	4,490	1,580	2,658	82,400	163,400
August	2,550	940	1,652	51,210	101,600
September	1,370	895	950	28,505	56,540
Water year 1916	*8,100	200	1,655	605,719	1,201,000

b Revised.

Monthly summary of discharge of Colorado River near Kremmling, Colo., 1904-18--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1916	1,090	615	817	25,328	50,240
November	678	340	492	14,774	29,300
December	465	352	386	†11,954	23,710
Calendar year 1916	8,100	285	1,676	613,574	1,217,000
January 1917	420	365	389	†12,062	23,920
February	435	352	381	†10,662	21,150
March	900	300	396	12,286	24,370
April	3,340	435	1,719	51,570	102,300
May	8,440	1,330	3,735	115,800	229,700
June	15,000	4,050	10,940	328,320	651,200
July	12,300	2,610	5,592	173,340	343,800
August	2,490	975	1,427	44,230	87,730
September	940	585	760	22,793	45,210
Water year 1917	15,000	300	2,255	823,119	1,633,000
October 1917	670	450	539	†16,709	33,140
November	576	370	515	15,436	30,620
December	576	-	412	†12,781	25,350
Calendar year 1917	15,000	-	2,236	815,989	1,618,000
January 1918	-	-	*374	11,594	23,000
February	-	-	*375	10,500	20,830
March	-	-	*510	15,810	31,360
April	1,780	800	1,155	34,655	68,740
May	8,680	1,250	5,544	171,850	340,900
June	16,500	6,210	11,630	348,760	691,800
July	5,360	1,580	3,245	100,610	199,600
August	1,680	730	1,180	36,565	72,530
September	1,050	730	880	26,390	52,340
Water year 1918	16,500	-	2,196	801,660	1,590,000

Yearly discharge of Colorado River near Kremmling, Colo., 1905-18

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1905	1,527	1,105,000	1,510	1,093,000
1906	1,822	1,319,000	1,874	1,357,000
1907	‡2,233	1,617,000	2,195	1,589,000
1908	1,226	890,000	1,209	877,500
1909	2,290	1,658,000	2,334	1,690,000
1910	1,284	929,800	1,251	905,800
1911	1,634	1,183,000	1,676	1,213,000
1912	a2,415	1,753,000	2,438	1,770,000
1913	1,476	1,069,000	1,456	1,064,000
1914	2,379	1,723,000	2,356	1,706,000
1915	1,382	1,001,000	1,372	993,100
1916	1,655	1,201,000	1,676	1,217,000
1917	2,255	1,633,000	2,236	1,618,000
1918	2,196	1,590,000	-	-

a Revised.

COLORADO RIVER AT GLENWOOD SPRINGS, COLO.

Location.- Lat. 39°33', long. 107°19', in sec. 9, T. 6 S., R. 89 W., a third of a mile upstream from State Street bridge at Glenwood Springs, and half a mile upstream from Roaring Fork, since January 1900.
1899: At railroad bridge at Glenwood Springs, just upstream from Roaring Fork.

Drainage area.- 4,560 square miles.

Records available.- May 1899 to September 1938.

Average discharge.- 39 years (water years 1900-1938), 3,030 second-feet.

Extremes.- 1899-1938: Maximum discharge, 30,100 second-feet June 14, 15, 1918 (gage height, 12.55 feet); minimum daily discharge, 286 second-feet Jan. 22, 1935.

Gage.- Water-stage recorder on right bank a third of a mile upstream from State Street bridge, since May 17, 1910. Zero of gage is 5,720.71 feet above mean sea level. Indicating float gage at same site and datum January 1900 to May 1910, read generally twice daily to half-tenths.
May 12 to July 17, 1899, wire-weight gage at railroad bridge half a mile downstream and just upstream from Roaring Fork, read daily to half-tenths.

Cooperation.- Gage heights furnished by Central Colorado Power Company for part of 1911, and by U. S. Forest Service for 1918-21. Records collected in collaboration with office of State engineer, 1934-38.

Remarks.- Records for 1899 fair, for 1900-1910 good, and for 1911-38 excellent, with a few exceptions for which estimated records are fair. Winter records are unusually good because water from hot springs prevents formation of ice at this station and open-water conditions prevail during coldest weather. No discharge measurements made in 1901. During 1907-8, debris from construction of Shoshone power project upstream caused unstable channel conditions and reduced accuracy of records. June to December 1910, gage height record unreliable because of silting of intake; discharge computed from eight discharge measurements at this station and from comparison of records at related stations. For periods of a few days in most years after 1910, faulty operation of water-stage recorder required estimates of daily discharge which were computed from record of power output at Shoshone plant, comparison of records at related stations, or weather records. During low water, operation of Shoshone power plant 6 miles upstream results in daily regulation of discharge. Diversions for irrigation above station.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
May 12-31, 1899	13,800	5,910	10,450	209,060	a414,700
June	25,400	7,100	16,260	487,740	967,400
July	9,620	1,520	4,320	133,920	265,600
August	1,460	1,000	1,173	36,363	72,120
September	-	-	*1,050	31,500	62,480
October 1899	-	-	*1,180	36,580	72,560
November	-	-	*1,010	30,300	60,100
December	-	-	*891	27,630	54,800
January 1900	920	730	825	25,565	50,710
February	880	730	816	22,835	45,290
March	1,440	840	1,155	35,800	71,010
April	3,110	1,100	1,764	52,910	104,900
May	19,700	2,930	9,965	308,930	612,800
June	19,300	6,800	13,350	400,400	794,200
July	6,500	1,680	3,106	96,290	191,000
August	1,620	1,000	1,247	38,660	76,680
September	920	765	826	24,790	49,170
Water year 1900	19,700	730	3,016	1,100,690	2,183,000
October 1900	-	-	*830	25,730	51,030
November	1,000	742	859	†25,181	49,950
December	882	540	686	21,338	42,320
Calendar year 1900	19,700	540	2,955	1,078,429	2,139,000
January 1901	845	518	693	21,487	42,620
February	1,040	620	765	21,431	42,510
March	1,040	742	878	27,233	54,020
April	6,030	742	1,845	55,352	109,800
May	19,700	5,510	11,840	367,150	728,200
June	13,500	8,120	10,410	312,290	619,400
July	9,140	2,240	4,466	138,440	274,600
August	3,550	1,480	2,027	62,830	124,600
September	1,590	882	1,126	33,772	66,990
Water year 1901	19,700	518	3,047	1,112,234	2,206,000

a Revised.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1901	1,040	920	979	30,360	60,220
November	1,000	845	932	27,973	55,480
December	1,000	620	817	25,341	50,260
Calendar year 1901	19,700	518	3,079	1,123,659	2,229,000
January 1902	882	590	721	22,354	44,340
February	845	590	775	21,704	43,050
March	882	710	803	24,886	49,360
April	2,720	742	1,425	42,762	84,820
May	12,000	3,650	8,392	260,140	516,000
June	10,400	2,720	6,332	189,960	376,800
July	2,900	1,100	1,783	55,260	109,600
August	-	-	*1,000	31,000	61,490
September	-	-	*1,000	30,000	59,500
Water year 1902	12,000	590	2,087	761,740	1,511,000
October 1902	-	-	*1,270	39,370	78,090
November	-	-	*700	21,000	41,650
December	775	402	646	20,039	39,750
Calendar year 1902	12,000	402	2,078	758,475	1,504,000
January 1903	620	450	534	16,539	32,800
February	605	472	547	15,310	30,370
March	950	515	738	22,866	45,350
April	3,900	894	1,695	50,838	100,800
May	11,400	2,890	5,908	183,140	363,300
June	16,500	8,450	12,580	377,460	748,700
July	9,650	2,590	5,018	155,550	308,500
August	2,440	1,240	1,604	49,730	98,640
September	1,690	1,040	1,425	42,740	84,770
Water year 1903	16,500	402	2,725	994,582	1,973,000
October 1903	1,570	1,040	1,340	41,540	82,390
November	1,190	672	958	28,732	56,990
December	966	455	595	18,434	36,560
Calendar year 1903	16,500	450	2,748	1,002,879	1,989,000
January 1904	830	485	583	18,067	35,840
February	a958	475	619	17,961	35,630
March	1,240	760	911	28,254	56,040
April	4,730	774	2,473	74,194	147,200
May	16,100	3,300	7,976	247,270	490,500
June	13,900	7,420	10,910	327,280	649,200
July	8,720	2,930	4,857	150,560	298,600
August	3,110	1,920	2,382	73,830	146,400
September	3,110	1,440	1,820	54,610	108,300
Water year 1904	16,100	455	2,953	1,080,732	2,144,000
October 1904	1,470	1,120	1,292	40,040	79,420
November	1,150	642	854	25,605	50,790
December	746	355	599	18,565	36,820
Calendar year 1904	16,100	355	2,941	1,076,236	2,135,000
January 1905	739	590	674	20,887	41,430
February	684	460	591	16,552	32,830
March	1,050	666	843	26,140	51,850
April	13,330	894	1,602	48,064	95,330
May	13,300	13,330	7,065	219,030	434,400
June	22,100	8,500	14,920	447,700	888,000
July	8,160	2,430	3,770	116,880	231,800
August	2,520	1,280	1,688	52,330	103,800
September	1,660	1,080	1,299	38,960	77,280
Water year 1905	22,100	355	2,934	1,070,753	2,124,000
October 1905	1,190	1,010	1,089	33,770	66,980
November	1,170	540	1,011	30,316	60,130
December	690	430	603	18,707	37,100
Calendar year 1905	22,100	430	2,930	1,069,336	2,121,000
January 1906	660	505	610	18,919	37,530
February	760	630	685	19,182	38,050
March	1,780	690	1,054	32,676	64,810
April	6,180	1,330	2,804	84,130	166,900
May	15,700	2,870	9,753	302,340	599,700
June	22,100	8,160	13,090	392,640	778,800
July	8,500	4,080	6,386	197,960	392,600
August	4,430	1,850	2,799	86,760	172,100
September	5,480	1,850	3,456	103,670	205,600
Water year 1906	22,100	430	3,619	1,321,070	2,620,000

a Revised.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1906	3,960	1,010	1,719	53,280	105,700
November	1,360	642	1,088	32,636	64,730
December	1,010	455	801	24,845	49,280
Calendar year 1906	22,100	455	3,696	1,349,038	2,676,000
January 1907	802	520	686	21,273	42,190
February	1,010	760	902	25,244	50,070
March	3,640	809	1,565	48,521	96,240
April	6,040	1,420	3,296	98,870	196,100
May	15,200	2,870	6,964	215,880	428,200
June	20,400	8,500	16,420	492,530	976,900
July	18,700	6,610	11,090	343,820	682,000
August	6,040	2,200	3,423	106,120	210,500
September	2,350	1,420	1,798	53,930	107,000
Water year 1907	20,400	455	4,156	1,516,949	3,009,000
October 1907	2,000	1,210	1,462	45,330	89,910
November	1,400	740	1,004	30,131	59,760
December	1,020	505	750	23,258	46,130
Calendar year 1907	20,400	505	4,123	1,504,907	2,985,000
January 1908	1,070	620	858	26,590	52,740
February	810	516	703	20,388	40,440
March	1,360	740	1,018	31,550	62,580
April	3,760	810	2,149	64,465	127,900
May	6,430	1,780	3,875	120,140	238,300
June	11,500	5,260	8,425	252,740	501,300
July	6,720	1,990	3,358	104,110	206,500
August	2,940	1,470	2,052	63,620	126,200
September	1,360	810	984	29,505	58,520
Water year 1908	11,500	505	2,218	811,827	1,610,000
October 1908	980	775	889	27,565	54,670
November	980	560	777	23,315	46,240
December	890	405	678	21,010	41,670
Calendar year 1908	11,500	405	2,145	784,998	1,557,000
January 1909	1,120	532	797	24,717	49,030
February	775	590	686	19,180	38,040
March	1,120	620	894	27,720	54,980
April	2,940	810	1,491	44,730	88,720
May	11,100	1,990	6,744	209,060	414,700
June	27,300	8,160	20,400	612,040	1,214,000
July	18,200	3,130	8,694	269,510	534,600
August	4,850	2,450	3,013	93,400	185,300
September	3,710	1,740	2,444	73,310	145,400
Water year 1909	27,300	405	3,960	1,445,557	2,867,000
October 1909	1,750	1,140	1,465	45,400	90,050
November	1,240	845	1,109	33,280	66,010
December	1,090	520	772	23,939	47,480
Calendar year 1909	27,300	520	4,045	1,476,286	2,928,000
January 1910	1,190	740	841	26,078	51,720
February	810	580	730	20,440	40,540
March	2,680	775	1,864	57,775	114,600
April	7,660	1,630	3,194	95,830	190,100
May	13,400	4,800	6,759	†209,520	415,600
June	14,300	4,500	7,693	†230,780	457,700
July	4,300	1,120	2,228	b 69,070	137,000
August	2,600	650	1,330	b41,230	81,780
September	2,000	650	1,373	b41,200	81,720
Water year 1910	14,300	520	a2,451	894,542	a1,774,000
October 1910	1,050	900	988	b30,620	60,730
November	950	780	903	b27,095	53,740
December	780	635	665	b20,600	40,860
Calendar year 1910	14,300	580	2,384	870,238	1,726,000
January 1911	1,360	510	701	21,725	43,090
February	1,490	600	749	20,975	41,600
March	1,360	660	942	29,200	57,920
April	4,160	1,030	1,794	53,830	106,800
May	11,600	3,030	7,909	245,170	486,300
June	15,200	5,500	11,660	349,900	694,000
July	9,150	2,700	5,018	155,560	308,500
August	2,700	1,490	1,933	59,930	118,900
September	1,490	1,030	1,279	38,370	76,110
Water year 1911	15,200	510	2,885	1,052,975	2,089,000

a Revised.
b Daily discharge estimated.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1911	2,540	940	1,439	44,620	88,500
November	1,240	450	915	27,445	54,440
December	860	470	653	20,230	40,130
Calendar year 1911	15,200	450	2,923	1,066,955	2,116,000
January 1912	940	630	768	23,795	47,200
February	940	575	754	21,965	43,370
March	1,030	630	805	24,965	49,520
April	1,930	860	1,413	42,400	84,100
May	18,700	2,380	7,505	232,660	461,500
June	29,700	9,580	19,070	572,160	1,135,000
July	18,700	6,430	9,492	294,260	583,700
August	6,980	1,780	3,239	100,410	199,200
September	1,930	1,490	1,662	49,850	98,880
Water year 1912	29,700	450	‡3,974	1,454,660	2,886,000
October 1912	1,640	1,280	1,469	45,550	90,350
November	1,510	655	1,085	32,560	64,580
December	905	600	745	23,081	45,780
Calendar year 1912	29,700	575	3,999	1,463,556	2,903,000
January 1913	(c)	(c)	725	†22,475	44,580
February	782	556	674	18,860	37,410
March	1,370	426	705	21,863	43,360
April	4,540	1,220	2,982	89,450	177,400
May	11,500	4,550	7,024	217,750	431,900
June	12,100	4,690	7,119	213,570	423,600
July	4,660	2,220	3,218	99,770	197,900
August	2,060	940	1,427	44,240	87,750
September	1,730	1,030	1,389	41,680	82,670
Water year 1913	12,100	426	‡2,386	870,849	‡1,727,000
October 1913	1,820	1,050	1,409	43,690	86,660
November	1,290	803	1,063	31,888	63,250
December	857	529	682	†21,148	41,950
Calendar year 1913	12,100	426	2,374	866,384	1,718,000
January 1914	891	613	733	22,719	45,060
February	802	672	754	21,106	41,860
March	2,000	725	1,011	31,355	62,190
April	3,770	1,340	2,599	77,960	154,600
May	24,200	3,490	12,480	386,920	767,400
June	29,700	9,220	18,720	561,650	1,114,000
July	8,870	3,990	5,825	180,580	358,200
August	4,570	2,010	2,706	83,900	166,400
September	2,240	1,340	1,695	†50,860	100,900
Water year 1914	29,700	529	4,147	1,513,776	3,002,000
October 1914	1,940	1,320	1,636	50,710	100,600
November	1,450	727	979	29,375	58,260
December	778	470	618	19,146	37,980
Calendar year 1914	29,700	470	4,154	1,516,281	3,007,000
January 1915	791	540	627	19,427	38,530
February	770	582	668	18,715	37,120
March	1,020	632	744	23,078	45,770
April	4,140	994	2,289	68,678	136,200
May	7,020	2,080	4,619	143,180	284,000
June	13,000	6,200	9,527	285,810	566,900
July	7,890	2,010	4,440	137,650	273,000
August	2,570	1,020	1,549	48,010	95,230
September	1,390	800	1,024	30,717	60,930
Water year 1915	13,000	470	2,396	874,496	1,735,000
October 1915	1,430	898	1,124	34,847	69,120
November	1,000	543	806	24,184	47,970
December	838	490	694	21,519	42,680
Calendar year 1915	13,000	490	2,345	855,815	1,697,000
January 1916	837	602	722	22,383	44,400
February	792	566	686	19,882	39,440
March	2,290	633	1,246	38,637	76,640
April	6,550	1,100	2,395	71,860	142,500
May	12,600	3,870	7,394	229,220	454,700
June	14,600	9,000	11,840	355,050	704,200
July	8,300	2,950	4,867	150,890	299,300
August	4,440	1,610	2,957	91,670	181,800
September	2,600	1,360	1,775	53,240	105,600
Water year 1916	14,600	490	3,042	1,113,382	2,208,000

c Previously published figure discarded.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1916	1,940	1,360	1,571	48,700	96,600
November	1,340	626	1,048	31,436	62,350
December	1,070	560	785	24,328	48,250
Calendar year 1916	14,600	560	3,107	1,137,296	2,256,000
January 1917	824	520	694	21,525	42,690
February	880	609	736	20,620	40,900
March	1,860	560	783	24,286	48,170
April	5,630	1,010	2,897	86,910	172,400
May	15,200	2,450	6,870	212,970	422,400
June	28,600	7,740	19,910	597,280	1,185,000
July	20,800	4,490	9,492	294,240	583,600
August	4,490	1,860	2,523	78,210	155,100
September	1,800	1,240	1,517	45,500	90,250
Water year 1917	28,600	520	4,071	1,486,005	2,948,000
October 1917	1,360	1,030	1,184	36,690	72,770
November	1,260	956	1,158	34,726	68,880
December	1,180	754	965	29,922	59,350
Calendar year 1917	28,600	520	4,063	1,482,879	2,942,000
January 1918	952	606	826	25,597	50,770
February	1,100	737	882	124,697	48,990
March	1,920	737	1,285	39,823	78,990
April	3,110	1,500	2,124	63,730	126,400
May	14,400	2,240	9,213	285,590	566,500
June	29,400	10,100	19,600	588,100	1,166,000
July	8,720	2,680	5,332	165,290	327,800
August	2,600	1,180	1,822	156,470	112,000
September	2,180	1,190	1,680	50,390	99,950
Water year 1918	29,400	606	3,838	1,401,025	2,778,000
October 1918	1,680	1,240	1,451	44,980	89,220
November	1,500	751	1,143	34,298	68,030
December	1,120	554	846	26,215	52,000
Calendar year 1918	29,400	554	3,850	1,405,180	2,787,000
January 1919	888	624	764	23,686	46,980
February	811	618	723	20,233	40,130
March	2,180	630	1,033	32,014	63,500
April	5,500	1,110	2,633	78,980	156,700
May	12,300	3,920	7,419	229,870	455,900
June	9,060	3,600	5,371	161,140	319,600
July	4,140	1,360	2,345	72,690	144,200
August	2,930	928	1,488	46,123	91,480
September	1,840	880	1,152	34,554	68,540
Water year 1919	12,300	554	2,205	804,783	1,596,000
October 1919	1,120	936	1,035	32,07	63,620
November	1,240	510	1,015	130,441	60,380
December	1,090	612	840	126,041	51,650
Calendar year 1919	12,300	510	2,158	787,848	1,563,000
January 1920	880	600	725	122,485	44,600
February	832	575	691	20,026	39,720
March	944	515	764	23,678	46,960
April	2,170	606	1,259	37,765	74,910
May	23,000	1,860	11,800	365,720	725,400
June	23,800	10,800	16,620	498,600	989,000
July	10,800	3,500	5,855	181,500	360,000
August	3,710	1,680	2,519	78,100	154,900
September	1,920	1,440	1,624	48,720	96,630
Water year 1920	23,800	510	3,730	1,365,152	2,708,000
October 1920	1,500	1,180	1,329	41,210	81,740
November	1,260	820	1,138	34,127	67,690
December	1,050	573	825	25,562	50,700
Calendar year 1920	23,800	515	3,764	1,377,493	2,732,000
January 1921	983	631	806	24,984	49,560
February	919	539	700	19,613	38,900
March	1,740	774	1,250	38,763	76,890
April	2,760	1,080	1,730	51,910	103,000
May	21,200	2,180	10,200	316,170	627,100
June	27,700	9,400	19,390	581,800	1,154,000
July	8,720	3,020	5,545	171,910	341,000
August	4,260	2,450	2,981	92,400	183,300
September	3,820	1,210	1,910	57,290	113,600
Water year 1921	27,700	539	3,988	1,455,739	2,887,000

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1921	1,320	944	1,143	35,446	70,310
November	1,230	740	1,058	31,753	62,980
December	1,510	633	1,061	32,876	65,210
Calendar year 1921	27,700	539	3,986	1,454,915	2,886,000
January 1922	1,130	‡528	814	25,248	50,080
February	1,110	600	844	23,645	46,900
March	2,240	714	1,228	38,076	75,520
April	3,020	1,160	1,724	51,720	102,600
May	15,700	3,500	7,456	231,150	458,500
June	15,700	5,910	11,150	334,530	663,500
July	a5,910	a1,760	3,088	95,740	189,900
August	2,520	1,380	1,797	55,710	110,500
September	1,810	927	1,253	37,603	74,580
Water year 1922	a15,700	528	2,722	993,497	1,971,000
October 1922	1,030	850	912	28,272	56,080
November	1,030	711	864	25,920	51,410
December	932	646	796	24,675	48,940
Calendar year 1922	15,700	528	2,664	972,289	1,929,000
January 1923	948	415	762	23,622	46,850
February	880	535	739	20,705	41,070
March	1,050	613	764	23,683	46,970
April	2,640	858	1,561	46,843	92,910
May	15,700	3,090	8,232	255,180	506,100
June	20,000	10,200	15,120	453,600	899,700
July	9,910	3,190	6,778	210,110	416,700
August	4,840	1,860	3,026	93,820	186,100
September	2,220	1,420	1,704	51,110	101,400
Water year 1923	20,000	415	3,445	1,257,540	2,494,000
October 1923	1,970	a1,580	1,803	55,880	110,800
November	1,600	935	1,281	38,440	76,240
December	1,090	684	856	26,528	52,620
Calendar year 1923	20,000	415	3,560	1,299,521	2,577,000
January 1924	970	602	850	26,347	52,260
February	1,020	635	844	24,478	48,550
March	1,050	602	840	26,045	51,660
April	4,940	796	2,505	75,163	149,100
May	11,700	2,280	7,973	247,160	490,200
June	23,400	7,300	13,160	394,930	783,300
July	6,990	1,920	3,625	112,390	222,900
August	1,870	958	1,264	39,173	77,700
September	1,260	775	1,029	30,873	61,240
Water year 1924	23,400	602	2,998	1,097,407	2,177,000
October 1924	1,700	958	1,366	42,338	83,980
November	1,300	831	1,138	34,154	67,740
December	995	433	734	22,745	45,110
Calendar year 1924	23,400	433	2,939	1,075,796	2,134,000
January 1925	964	564	735	22,780	45,180
February	848	690	735	20,572	40,800
March	2,340	783	1,268	39,303	77,960
April	3,840	1,720	2,757	82,700	164,000
May	11,000	3,080	6,452	200,020	396,700
June	10,200	5,250	7,385	221,560	439,500
July	5,530	1,720	3,325	103,080	204,500
August	2,270	1,360	1,703	52,800	104,700
September	2,340	1,320	1,702	51,070	101,300
Water year 1925	11,000	433	2,447	893,122	1,771,000
October 1925	1,720	1,220	1,478	45,810	90,860
November	1,420	858	1,087	32,604	64,670
December	1,040	527	790	24,482	48,560
Calendar year 1925	11,000	527	2,457	896,781	1,779,000
January 1926	922	570	‡738	22,890	45,400
February	774	612	702	19,663	39,000
March	1,410	590	890	27,604	54,750
April	6,390	769	3,311	99,318	197,000
May	17,000	4,070	9,647	299,070	593,200
June	22,700	8,250	14,400	431,970	856,800
July	11,000	3,090	6,258	194,000	384,800
August	3,290	1,360	2,245	69,590	138,000
September	1,400	742	983	29,496	58,500
Water year 1926	22,700	527	3,552	1,296,497	2,572,000

a Revised.

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1926	1,290	758	1,025	31,772	63,020
November	1,120	734	957	28,705	56,940
December	1,210	419	745	23,085	45,790
Calendar year 1926	22,700	419	3,499	1,277,163	2,533,000
January 1927	844	584	706	21,871	43,380
February	908	537	700	19,589	38,850
March	1,920	602	860	26,669	52,900
April	5,810	1,330	2,280	68,390	135,600
May	17,800	6,690	11,380	352,920	700,000
June	14,400	9,570	11,570	347,140	688,500
July	9,570	2,830	4,824	149,530	296,600
August	4,320	1,980	2,748	85,190	169,000
September	2,100	1,320	1,625	48,740	96,670
Water year 1927	17,800	419	3,298	1,203,601	2,387,000
October 1927	1,860	1,240	1,516	46,990	93,200
November	1,510	980	1,333	40,000	79,340
December	1,290	750	1,009	†31,280	62,040
Calendar year 1927	17,800	537	3,393	1,238,309	2,456,000
January 1928	1,140	786	954	29,563	58,640
February	977	559	815	23,631	46,870
March	2,340	774	1,186	36,760	72,910
April	6,390	1,170	2,176	65,270	129,500
May	27,000	7,300	13,710	425,160	843,300
June	26,600	8,570	13,270	398,230	789,900
July	11,700	3,720	6,797	210,700	417,900
August	3,600	1,510	2,203	†68,290	135,500
September	1,800	1,200	1,449	43,460	86,200
Water year 1928	27,000	559	3,878	1,419,334	2,815,000
October 1928	1,360	1,140	1,262	39,110	77,570
November	1,360	859	1,123	33,701	66,840
December	947	527	691	21,429	42,500
Calendar year 1928	27,000	527	3,812	1,395,304	2,768,000
January 1929	886	673	768	23,814	47,230
February	833	598	744	20,839	41,330
March	1,940	626	951	29,490	58,490
April	4,070	1,330	2,284	68,510	135,900
May	18,700	3,000	9,566	296,560	588,200
June	20,800	11,000	15,340	460,100	912,600
July	10,200	4,150	6,346	†196,740	390,200
August	6,100	2,120	3,463	107,340	212,900
September	3,950	2,060	2,703	81,090	160,800
Water year 1929	20,800	527	3,777	1,378,723	2,735,000
October 1929	2,240	1,420	1,790	55,570	110,200
November	1,650	835	1,280	38,397	76,160
December	1,080	587	891	27,621	54,790
Calendar year 1929	20,800	587	3,852	1,406,071	2,789,000
January 1930	1,030	622	837	25,956	51,480
February	969	708	848	23,749	47,110
March	1,150	730	895	27,743	55,030
April	7,250	903	4,427	132,803	263,400
May	14,900	3,100	6,188	191,830	380,500
June	15,200	4,760	9,642	289,260	573,700
July	4,320	2,380	3,221	99,860	198,100
August	6,400	2,030	3,296	102,180	202,700
September	2,100	1,280	1,626	48,780	96,750
Water year 1930	15,200	622	2,914	1,063,749	2,110,000
October 1930	1,440	1,000	1,273	39,460	78,270
November	1,060	544	854	25,634	50,840
December	768	571	657	20,373	40,410
Calendar year 1930	15,200	544	2,815	1,027,628	2,038,000
January 1931	652	515	588	18,226	36,150
February	780	476	633	17,735	35,180
March	1,010	621	722	22,369	44,370
April	2,600	704	1,596	47,871	94,950
May	8,300	2,000	4,255	131,890	261,600
June	9,240	3,630	6,100	183,000	363,000
July	5,140	907	1,843	57,144	113,300
August	1,740	822	1,092	33,844	67,130
September	1,860	658	980	29,395	58,300
Water year 1931	9,240	476	1,718	626,941	1,244,000

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	1,190	579	‡823	25,515	50,610
November	971	396	647	19,402	38,480
December	736	338	490	15,180	30,110
Calendar year 1931	9,240	338	1,648	601,571	1,193,000
January 1932	568	414	469	14,543	28,850
February	692	306	531	15,386	30,520
March	1,120	505	715	22,178	43,990
April	4,920	1,040	2,427	72,800	144,400
May	15,800	2,300	8,751	271,280	538,100
June	13,200	9,260	10,800	324,070	642,800
July	8,780	2,480	4,561	144,480	286,600
August	3,340	1,440	1,883	58,380	115,800
September	1,570	626	985	29,559	58,630
Water year 1932	15,800	306	2,767	1,012,773	2,009,000
October 1932	1,120	634	925	†28,666	56,860
November	1,110	640	835	25,061	49,710
December	992	362	663	20,542	40,740
Calendar year 1932	15,800	306	2,806	1,026,945	2,037,000
January 1933	751	602	668	20,695	41,050
February	674	508	604	16,903	33,530
March	1,140	660	764	23,685	46,980
April	2,520	807	1,227	36,819	73,030
May	13,300	1,530	4,583	142,060	281,800
June	20,200	7,500	15,240	457,280	907,000
July	6,870	1,640	3,809	118,080	234,200
August	2,150	1,080	1,444	44,760	88,780
September	1,540	828	1,119	33,571	66,590
Water year 1933	20,200	362	2,652	968,122	1,920,000
October 1933	1,200	695	948	29,382	58,280
November	919	656	789	23,661	46,930
December	909	526	675	20,927	41,510
Calendar year 1933	20,200	508	2,652	967,823	1,920,000
January 1934	800	440	600	18,591	36,870
February	677	475	610	17,090	33,900
March	1,060	460	729	22,603	44,830
April	3,290	671	1,731	51,939	103,000
May	8,010	3,290	5,603	173,690	344,500
June	6,660	1,310	2,755	82,660	164,000
July	1,250	635	930	28,833	57,190
August	1,260	690	921	28,566	56,660
September	854	601	714	21,406	42,460
Water year 1934	8,010	440	1,423	519,348	1,030,000
October 1934	863	418	581	18,018	35,740
November	752	432	594	17,813	35,330
December	704	335	532	16,477	32,680
Calendar year 1934	8,010	335	1,364	497,686	987,200
January 1935	752	286	535	16,576	32,880
February	623	445	537	15,033	29,820
March	871	495	672	20,829	41,310
April	2,030	717	1,283	38,476	76,320
May	7,210	1,560	3,372	104,540	207,400
June	20,500	5,810	11,610	348,230	690,700
July	7,060	2,390	‡4,337	134,460	266,700
August	3,100	1,190	1,687	52,300	103,700
September	1,580	697	1,144	34,320	68,070
Water year 1935	20,500	286	2,239	817,072	1,621,000
October 1935	1,240	697	914	28,334	56,200
November	1,110	697	887	26,611	52,780
December	723	369	555	17,208	34,130
Calendar year 1935	20,500	286	2,293	836,917	1,660,000
January 1936	690	422	580	17,970	35,640
February	767	460	597	17,325	34,360
March	898	595	718	22,247	44,130
April	7,880	552	3,609	108,274	214,800
May	16,400	6,100	12,230	379,100	751,900
June	16,600	6,510	9,690	290,690	576,600
July	6,210	2,700	3,845	119,210	236,400
August	3,790	1,570	2,720	84,310	167,200
September	2,060	838	1,324	39,735	78,810
Water year 1936	16,600	369	3,145	1,151,014	2,283,000

Monthly summary of discharge of Colorado River at Glenwood Springs, Colo., 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	1,240	837	1,060	32,860	65,160
November	1,220	585	900	27,014	53,580
December	869	456	650	20,164	39,990
Calendar year 1936	16,600	422	3,166	1,158,889	2,299,000
January 1937	706	456	567	17,569	34,850
February	752	461	653	18,293	36,280
March	1,110	418	783	24,260	48,120
April	2,870	640	1,637	49,119	97,430
May	10,300	1,920	6,982	216,450	429,300
June	9,000	4,310	5,759	†172,770	342,700
July	4,310	1,700	2,828	87,680	173,900
August	1,800	970	1,235	38,276	75,920
September	1,420	853	1,100	33,011	65,480
Water year 1937	10,300	418	2,020	737,456	1,463,000
October 1937	1,300	869	1,090	33,791	67,020
November	1,240	444	987	29,617	58,740
December	1,100	412	690	21,379	42,400
Calendar year 1937	10,300	412	2,033	742,215	1,472,000
January 1938	1,050	490	645	20,008	39,690
February	877	586	705	19,741	39,160
March	1,670	772	1,106	34,276	67,990
April	7,360	535	2,823	84,689	168,000
May	17,600	3,600	8,763	271,660	538,800
June	20,400	11,300	15,050	451,400	895,300
July	11,100	2,390	4,825	149,590	296,700
August	2,280	1,190	1,724	53,450	106,000
September	2,650	1,260	1,901	57,030	113,100
Water year 1938	20,400	412	3,361	1,226,631	2,433,000

Yearly discharge of Colorado River at Glenwood Springs, Colo., 1900-1938

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1900	3,016	2,183,000	2,955	2,139,000
1901	3,047	2,206,000	3,079	2,229,000
1902	2,087	1,511,000	2,078	1,504,000
1903	2,725	1,973,000	2,748	1,989,000
1904	2,953	2,144,000	2,941	2,135,000
1905	2,934	2,124,000	2,930	2,121,000
1906	3,619	2,620,000	3,696	2,676,000
1907	4,156	3,009,000	4,123	2,985,000
1908	2,218	1,610,000	2,145	1,557,000
1909	3,960	2,867,000	4,045	2,928,000
1910	‡2,451	‡1,774,000	2,384	1,726,000
1911	2,885	2,089,000	2,923	2,116,000
1912	‡3,974	2,886,000	3,999	2,903,000
1913	‡2,386	‡1,727,000	2,374	1,718,000
1914	4,147	3,002,000	4,154	3,007,000
1915	2,396	1,735,000	2,345	1,697,000
1916	3,042	2,208,000	3,107	2,256,000
1917	4,071	2,948,000	4,063	2,942,000
1918	3,838	2,778,000	3,850	2,787,000
1919	2,205	1,596,000	2,158	1,563,000
1920	3,730	2,708,000	3,764	2,732,000
1921	3,988	2,887,000	3,986	2,886,000
1922	2,722	1,971,000	2,664	1,929,000
1923	3,445	2,494,000	3,560	2,577,000
1924	2,998	2,177,000	2,939	2,134,000
1925	2,447	1,771,000	2,457	1,779,000
1926	3,552	2,572,000	3,499	2,533,000
1927	3,298	2,387,000	3,393	2,456,000
1928	3,878	2,815,000	3,812	2,768,000
1929	3,777	2,735,000	3,852	2,789,000
1930	2,914	2,110,000	2,815	2,038,000
1931	1,718	1,244,000	1,648	1,193,000
1932	2,767	2,009,000	2,806	2,037,000
1933	2,652	1,920,000	2,652	1,920,000
1934	1,423	1,030,000	1,364	987,200
1935	2,239	1,621,000	2,293	1,660,000
1936	3,145	2,283,000	3,166	2,299,000
1937	2,020	1,463,000	2,033	1,472,000
1938	3,361	2,433,000	-	-

ROARING FORK AT GLENWOOD SPRINGS, COLO.

Location.- Lat. 39°33', long. 107°20', in sec. 9, T. 6 S., R. 89 W., at Glenwood Springs, 1,500 feet upstream from mouth, since Nov. 20, 1915.
1906-15: At highway bridge 700 feet from mouth.

Drainage area.- 1,460 square miles.

Records available.- October 1905 to September 1909, and September 1910 to September 1938.

Average discharge.- 32 years (water years, 1906-9, 1911-38), 1,540 second-feet.

Extremes.- 1906-38: Maximum discharge, 17,600 second-feet June 14, 1918 (gage height, 8.45 feet) and June 14, 1921 (gage height, 8.7 feet); minimum discharge, 145 second-feet Jan. 21, 1935 (gage height, 0.65 foot); minimum daily discharge, 179 second-feet Jan. 21, 1935.

Gage.- Water-stage recorder on left bank 800 feet upstream from highway bridge, and 1,500 feet from mouth, since Oct. 27, 1917. Zero of gage is 5,720.73 feet above mean sea level. Inclined staff gage at same site and datum used Nov. 20, 1915, to Oct. 27, 1917; read daily to half-tenths.
Apr. 6, 1906, to Nov. 20, 1915, chain gage on highway bridge 700 feet (formerly called 500 feet) from mouth; read daily to tenths or half-tenths.

Cooperation.- Gage-height record furnished by U. S. Forest Service 1910-22. Records collected in collaboration with office of State engineer, 1934-38, which also furnished entire record of daily discharge, 1932-33.

Remarks.- Records for 1906-9 good, for 1910-17 fair, and for 1918-38 excellent; estimated records fair. Winter conditions favorable, practically no ice-effect during many winters, and no more than moderate effect for short periods during most others. Slight backwater effect from highest stages in Colorado River on gage used prior to November 1915. No gage-height record October 1909 to September 1910, many omissions of daily gage readings 1910-17, and some loss of gage-height record during later years. For periods of missing or affected gage heights, except during 1910, discharge was estimated or computed from comparison with records at related stations, principally Colorado River at Glenwood Springs. In most cases it was possible to estimate discharge for each day or for successive short periods; for 1911-17, discharge was interpolated for many days. Diversions for irrigation above station. Minor transmountain diversions to Arkansas River Basin since 1925, and larger diversions to that basin through Twin Lakes tunnel since May 24, 1935. During water year 1938, about 50,000 acre-feet of water were thus diverted.

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38

(* Estimated; † Partly estimated; ‡ Corrected).

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1905	-	-	*700	21,700	43,040
November	-	-	*600	18,000	35,700
December	-	-	*475	14,725	29,210
January 1906	-	-	*425	13,175	26,130
February	-	-	*400	11,200	22,210
March	-	-	*500	15,500	30,740
April	2,530	-	1,200	†36,000	71,400
May	6,940	1,280	4,294	133,120	264,000
June	11,400	4,740	7,061	211,820	420,100
July	6,060	2,220	4,005	124,150	246,200
August	2,640	910	1,589	49,246	97,680
September	1,870	784	1,146	34,385	68,200
Water year 1906	11,400	-	‡1,871	683,021	1,355,000
October 1906	1,340	700	943	29,228	57,970
November	858	375	604	18,115	35,930
December	520	225	421	13,044	25,870
Calendar year 1906	11,400	225	1,888	688,983	1,366,000
January 1907	450	266	368	11,414	22,640
February	450	290	367	10,288	20,410
March	995	330	554	17,171	34,060
April	2,640	670	1,490	44,697	88,660
May	5,300	1,090	2,412	74,780	148,300
June	8,040	2,750	6,268	188,030	373,000
July	8,000	3,600	5,502	170,560	338,300
August	3,120	1,240	1,976	61,260	121,500
September	1,290	805	1,027	30,800	61,090
Water year 1907	8,040	225	1,834	669,387	1,328,000

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1907	1,040	670	802	24,864	49,320
November	670	375	504	15,130	30,010
December	486	360	453	14,047	27,860
Calendar year 1907	8,040	266	1,817	663,041	1,315,000
January 1908	510	400	433	13,413	26,600
February	450	350	400	11,600	23,010
March	650	400	500	15,510	30,760
April	1,980	400	1,160	34,813	69,050
May	3,190	1,190	1,873	58,070	115,200
June	6,320	2,620	4,383	131,490	260,800
July	3,510	1,190	2,171	67,300	133,500
August	1,680	670	1,214	37,634	74,650
September	625	455	534	16,033	31,800
Water year 1908	6,320	350	1,202	439,904	872,600
October 1908	625	455	530	16,445	32,620
November	540	390	a447	13,406	26,590
December	555	375	455	14,105	27,980
Calendar year 1908	6,320	350	1,174	429,819	852,600
January 1909	510	300	410	12,695	25,180
February	400	300	362	10,125	20,080
March	450	350	421	13,050	25,880
April	1,500	450	782	23,465	46,540
May	4,730	995	2,912	90,280	179,100
June	11,300	2,820	8,348	250,450	496,800
July	8,740	1,700	4,069	126,130	250,200
August	2,000	1,220	1,477	45,780	90,800
September	2,840	935	1,527	45,815	90,870
Water year 1909	11,300	300	1,813	661,746	1,313,000
September 21-30, 1910	885	690	767	7,670	15,210
October 1910	760	485	587	18,198	36,100
November	655	(b)	494	†14,816	29,390
December	-	-	383	†11,860	23,520
January 1911	680	270	403	†12,505	24,800
February	680	315	389	10,903	21,630
March	790	365	514	15,932	31,600
April	2,530	645	1,039	†31,180	61,840
May	5,430	1,500	3,823	†118,510	235,100
June	-	-	*7,500	225,000	446,300
July	-	-	*3,250	100,750	199,800
August	-	-	*1,000	31,000	61,490
September	-	-	*850	25,500	50,580
Water year 1911	-	270	1,688	616,154	1,222,000
October 1911	4,800	680	1,492	46,250	91,740
November	1,120	365	653	19,587	38,850
December	680	365	521	16,162	32,060
Calendar year 1911	-	270	1,790	653,279	1,296,000
January 1912	535	370	445	13,792	27,360
February	460	330	385	11,157	22,130
March	535	370	423	13,105	25,990
April	1,380	435	900	26,990	53,530
May	9,840	1,750	4,039	125,210	248,400
June	12,800	7,270	10,040	301,070	597,200
July	5,840	3,650	5,003	155,080	307,600
August	3,270	1,420	2,164	†67,090	133,100
September	1,370	785	983	†29,502	58,520
Water year 1912	12,800	330	2,254	824,995	1,636,000
October 1912	900	750	812	25,182	49,950
November	820	535	689	20,679	41,020
December	620	410	542	16,790	33,300
Calendar year 1912	12,800	330	2,201	805,647	1,598,000
January 1913	-	-	*450	13,950	27,670
February	-	-	*420	11,760	23,330
March	680	350	426	13,213	26,210
April	2,530	535	1,118	33,540	66,530
May	7,270	1,960	3,882	120,330	238,700
June	6,300	3,280	4,639	†139,170	276,000
July	-	990	2,200	†68,200	136,300
August	990	620	773	23,974	47,550
September	1,180	620	801	24,041	47,680
Water year 1913	7,270	350	1,400	510,829	1,013,000

a Revised.
b Previously published figure discarded.

Note.- Records for water year 1911 published for 1910 in Water-Supply Paper 617.

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1913	820	590	702	43,773	43,190
November	650	560	614	18,435	36,570
December	560	350	472	c14,630	29,020
Calendar year 1913	7,270	350	1,378	503,016	997,800
January 1914	-	-	*400	12,400	24,600
February	-	-	*450	12,600	24,990
March	-	-	*500	15,500	30,740
April	-	-	*1,000	30,000	59,500
May	12,300	-	7,040	†218,240	432,900
June	14,200	7,140	10,970	†328,960	652,500
July	9,070	2,620	6,231	†193,150	383,100
August	2,620	852	1,309	40,569	80,470
September	990	638	791	23,742	47,090
Water year 1914	14,200	-	2,548	929,999	1,845,000
October 1914	927	578	727	22,536	44,700
November	602	440	506	15,187	30,120
December	485	358	431	13,352	26,480
Calendar year 1914	14,200	-	2,538	926,236	1,837,000
January 1915		-	*370	11,470	22,750
February	405	350	369	†10,345	20,520
March	430	350	371	11,512	22,830
April	1,490	370	654	19,633	38,940
May	2,550	560	1,394	43,226	85,740
June	6,530	2,210	4,312	129,350	256,600
July	3,680	835	2,061	63,905	126,800
August	1,370	455	680	21,071	41,790
September	735	405	526	15,769	31,280
Water year 1915	6,530	-	1,034	377,356	748,500
October 1915	615	430	499	15,462	30,670
November	588	390	469	14,080	27,930
December	485	360	425	13,174	26,130
Calendar year 1915	6,530	-	1,011	368,997	732,000
January 1916	485	335	404	12,530	24,850
February	390	330	369	10,700	21,220
March	1,260	300	609	18,890	37,470
April	3,030	592	1,162	34,862	69,150
May	5,280	1,470	3,080	95,470	189,400
June	8,520	4,830	6,747	202,420	401,500
July	5,990	2,220	3,732	115,680	229,400
August	3,030	975	1,867	57,870	114,800
September	1,470	790	989	29,677	58,860
Water year 1916	8,520	300	1,696	620,815	1,231,000
October 1916	1,320	860	1,078	33,420	66,290
November	815	475	638	19,151	37,990
December	610	445	541	16,766	33,250
Calendar year 1916	8,520	300	1,769	647,436	1,284,000
January 1917	575	445	520	16,122	31,980
February	540	415	469	13,137	26,060
March	1,060	390	523	16,227	32,190
April	2,540	475	980	29,408	58,330
May	5,460	1,160	2,758	85,500	169,600
June	11,100	2,700	8,384	251,530	498,900
July	9,640	3,400	5,545	171,900	341,000
August	2,860	1,010	1,670	51,770	102,700
September	1,590	910	1,088	32,640	64,740
Water year 1917	11,100	390	2,021	737,571	1,463,000
October 1917	910	685	763	23,657	46,920
November	770	540	625	18,740	37,170
December	589	475	519	16,076	31,890
Calendar year 1917	11,100	390	1,991	726,707	1,441,000
January 1918	527	380	480	14,870	29,490
February	501	380	442	12,372	24,540
March	920	410	599	18,655	36,800
April	1,420	685	978	29,351	58,220
May	6,190	1,280	3,689	114,370	226,800
June	15,200	3,210	9,723	291,700	578,600
July	4,590	1,320	2,715	84,170	166,900
August	1,260	685	994	30,809	61,110
September	1,780	685	1,060	31,796	63,070
Water year 1918	15,200	380	1,881	686,466	1,362,000

c Daily discharge estimated.

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1918	920	788	838	25,986	51,540
November	851	554	697	20,920	41,490
December	640	469	547	†16,970	33,660
Calendar year 1918	15,200	380	1,896	691,869	1,372,000
January 1919	540	475	510	†15,816	31,370
February	494	400	432	12,084	23,970
March	788	390	507	15,722	31,180
April	2,540	561	1,197	35,915	71,240
May	6,940	1,900	3,758	116,490	231,100
June	4,480	2,170	3,364	100,910	200,200
July	2,700	890	1,579	48,935	97,060
August	1,900	531	889	27,561	54,670
September	1,280	512	780	23,385	46,380
Water year 1919	6,940	390	1,262	460,694	913,900
October 1919	732	633	686	21,275	42,200
November	640	538	580	17,387	34,490
December	582	390	512	15,885	31,510
Calendar year 1919	6,940	390	1,237	451,365	895,400
January 1920	568	427	487	15,102	29,950
February	457	380	418	12,121	24,040
March	554	380	450	13,956	27,680
April	806	439	607	18,205	36,110
May	9,920	1,130	4,969	154,040	305,500
June	10,800	5,460	7,654	229,620	455,400
July	6,440	1,900	3,745	116,100	230,300
August	2,390	980	1,446	44,840	88,940
September	940	747	838	25,126	49,840
Water year 1920	10,800	380	1,868	683,657	1,366,000
October 1920	792	656	700	21,696	43,030
November	688	451	589	17,678	35,060
December	598	382	479	†14,856	29,470
Calendar year 1920	10,800	380	1,867	683,340	1,355,000
January 1921	514	330	416	12,911	25,610
February	412	330	375	10,501	20,830
March	600	418	504	15,637	31,020
April	909	500	673	20,184	40,030
May	7,380	1,030	3,196	99,080	196,500
June	17,300	5,720	8,587	†257,620	511,000
July	6,100	1,720	3,229	100,090	198,500
August	2,020	1,160	1,495	46,330	91,890
September	2,090	688	1,037	31,120	61,730
Water year 1921	17,300	330	1,775	647,703	1,285,000
October 1921	720	570	646	20,036	39,740
November	626	400	510	15,303	30,350
December	588	370	439	†13,610	27,000
Calendar year 1921	17,300	330	1,760	642,422	1,274,000
January 1922	440	365	416	†12,910	25,610
February	528	340	401	†11,232	22,280
March	744	385	523	16,221	32,170
April	1,760	540	870	26,106	51,780
May	9,000	1,840	4,186	†129,780	257,400
June	9,000	3,110	5,649	†169,480	336,200
July	3,740	1,270	2,099	†65,080	129,100
August	1,620	930	1,157	35,855	71,120
September	1,090	685	834	25,032	49,650
Water year 1922	9,000	340	1,481	540,645	1,072,000
October 1922	699	564	632	19,600	38,880
November	635	522	571	17,122	33,960
December	578	474	546	16,916	33,550
Calendar year 1922	9,000	340	1,494	545,334	1,082,000
January 1923	-	-	468	†14,514	28,790
February	406	-	362	†10,136	20,100
March	578	350	419	12,993	25,770
April	1,120	543	792	23,759	47,130
May	7,600	1,120	3,546	109,920	218,000
June	8,600	4,760	6,731	201,930	400,500
July	6,080	1,650	3,800	117,810	233,700
August	2,250	1,050	1,621	50,260	99,690
September	1,260	791	943	28,281	56,090
Water year 1923	8,600	-	1,708	623,241	1,236,000

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	998	572	767	†23,776	47,160
November	736	425	584	17,514	34,740
December	580	433	527	16,329	32,390
Calendar year 1923	8,600	-	1,718	627,222	1,244,000
January 1924	666	417	525	†16,268	32,270
February	619	342	418	12,131	24,060
March	448	349	393	12,188	24,170
April	1,350	410	813	24,398	48,390
May	5,010	972	3,229	100,102	198,500
June	11,100	2,900	6,062	181,860	360,700
July	3,540	895	1,914	59,320	117,700
August	847	464	600	18,598	36,890
September	697	410	562	16,871	33,460
Water year 1924	11,100	342	1,364	499,355	990,400
October 1924	737	538	621	19,238	38,160
November	580	450	525	15,749	31,240
December	482	-	419	†12,996	25,780
Calendar year 1924	11,100	-	1,338	489,719	971,300
January 1925	-	-	380	d11,765	23,340
February	420	350	382	10,690	21,200
March	645	366	483	14,971	29,690
April	1,910	580	1,111	33,317	66,080
May	6,360	1,560	3,193	98,980	196,300
June	8,040	2,300	4,065	121,940	241,900
July	3,740	1,330	2,384	73,900	146,600
August	1,790	872	1,277	39,583	78,510
September	2,240	1,020	1,339	40,170	79,680
Water year 1925	8,040	-	1,352	493,299	978,500
October 1925	1,250	824	966	29,953	59,410
November	852	580	692	20,757	41,170
December	593	352	456	†14,124	28,010
Calendar year 1925	8,040	-	1,398	510,150	1,012,000
January 1926	432	330	380	†11,795	23,400
February	390	335	360	10,093	20,020
March	500	338	411	12,756	25,300
April	2,170	370	971	29,124	57,770
May	6,000	1,130	2,838	†87,970	174,500
June	8,440	3,110	5,172	†155,150	307,700
July	5,120	1,200	2,654	82,280	163,200
August	1,300	535	889	27,544	54,630
September	600	500	546	†16,387	32,500
Water year 1926	8,440	330	1,364	497,933	987,600
October 1926	895	530	680	†21,094	41,840
November	592	510	555	16,662	33,050
December	552	406	487	15,089	29,930
Calendar year 1926	8,440	330	1,331	485,944	963,800
January 1927	505	385	437	13,553	26,880
February	432	355	400	11,205	22,220
March	536	359	413	12,811	25,410
April	2,300	475	806	24,170	47,940
May	7,050	1,880	4,187	129,800	257,500
June	8,280	4,510	6,048	181,430	359,900
July	4,030	1,630	2,688	83,320	165,300
August	2,220	950	1,458	45,184	89,620
September	1,780	890	1,186	35,591	70,590
Water year 1927	8,280	355	1,616	589,909	1,170,000
October 1927	1,180	725	906	28,095	55,730
November	770	604	693	20,790	41,240
December	675	480	551	†17,067	33,850
Calendar year 1927	8,280	355	1,652	603,016	1,196,000
January 1928	510	410	452	c14,015	27,800
February	461	385	433	12,548	24,890
March	668	398	477	14,792	29,340
April	1,900	495	779	23,376	46,370
May	9,670	2,440	4,376	135,710	269,200
June	9,670	2,980	4,983	149,490	296,500
July	5,040	1,480	2,784	86,290	171,200
August	1,470	725	986	30,555	60,600
September	959	647	729	21,865	43,370
Water year 1928	9,670	385	1,515	554,593	1,100,000

c Daily discharge estimated.
d Discharge estimated for successive short periods.

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	661	569	619	19,198	38,080
November	610	500	548	16,446	32,620
December	558	410	475	†14,733	29,220
Calendar year 1928	9,670	385	1,473	539,018	1,069,000
January 1929	475	363	435	†13,482	26,740
February	465	342	406	11,382	22,580
March	586	366	423	13,107	26,000
April	1,220	465	748	22,432	44,490
May	8,340	833	3,647	113,069	224,300
June	8,990	4,920	6,503	195,080	386,900
July	4,810	1,900	2,760	85,550	169,700
August	2,740	995	1,528	47,355	93,930
September	2,790	1,050	1,878	66,330	111,700
Water year 1929	8,990	342	1,666	608,164	1,206,000
October 1929	1,540	982	1,245	38,604	76,570
November	1,070	620	852	†25,568	50,710
December	610	377	524	†16,233	32,200
Calendar year 1929	8,990	342	1,748	638,192	1,266,000
January 1930	528	356	443	†13,732	27,240
February	450	370	402	†11,252	22,320
March	465	322	388	12,015	23,830
April	1,970	420	1,212	36,363	72,120
May	6,990	924	2,191	67,930	134,700
June	7,290	2,600	4,465	133,960	265,700
July	2,580	1,370	1,784	55,300	109,700
August	1,990	834	1,382	42,851	84,990
September	843	645	740	22,194	44,020
Water year 1930	7,290	322	1,304	476,002	944,100
October 1930	781	475	623	19,323	38,330
November	543	390	484	14,531	28,820
December	505	289	422	†13,075	25,930
Calendar year 1930	7,290	289	1,212	442,526	877,700
January 1931	543	243	368	11,408	22,630
February	325	277	307	8,608	17,070
March	344	271	306	9,496	18,840
April	692	283	472	14,148	28,060
May	2,700	640	1,407	†43,629	86,540
June	4,150	1,670	2,802	84,070	166,800
July	2,070	390	920	28,520	56,570
August	727	295	426	13,203	26,190
September	1,290	313	540	16,214	32,160
Water year 1931	4,150	243	757	276,225	547,900
October 1931	834	491	622	19,279	38,240
November	519	300	453	13,580	26,940
December	477	229	360	11,169	22,150
Calendar year 1931	4,150	229	749	273,324	542,200
January 1932	456	212	342	10,610	21,040
February	407	235	339	9,843	19,520
March	456	276	368	11,412	22,640
April	1,810	428	1,026	30,771	61,030
May	6,700	1,090	4,044	125,370	248,700
June	7,910	3,870	5,848	175,430	348,000
July	5,980	2,140	3,490	108,194	214,600
August	2,120	878	1,299	40,276	79,890
September	950	519	647	19,401	38,480
Water year 1932	7,910	212	1,572	575,335	1,141,000
October 1932	712	612	654	20,285	40,230
November	650	509	576	17,292	34,300
December	619	375	506	15,700	31,140
Calendar year 1932	7,910	212	1,597	584,584	1,160,000
January 1933	768	382	583	18,079	35,860
February	552	357	445	12,454	24,700
March	545	344	398	12,347	24,490
April	860	414	564	16,929	33,580
May	7,400	612	2,123	65,809	130,500
June	10,300	3,020	6,881	206,430	409,400
July	2,710	704	1,685	52,167	103,500
August	1,130	481	684	21,199	42,050
September	930	447	653	19,598	38,870
Water year 1933	10,300	344	1,310	478,289	948,600

Note.- No yearly discharge previously published for 1932-33.

Monthly summary of discharge of Roaring Fork at Glenwood Springs, Colo., 1905-9, 1910-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	697	390	540	16,743	33,210
November	454	383	424	12,731	25,250
December	432	275	341	†10,558	20,940
Calendar year 1933	10,300	275	1,274	465,044	922,400
January 1934	369	267	333	10,310	20,450
February	336	273	306	8,559	16,980
March	404	285	340	10,536	20,900
April	1,720	343	885	26,543	52,650
May	3,730	1,420	2,750	85,260	169,100
June	2,590	636	1,218	36,555	72,510
July	602	254	428	13,256	26,290
August	376	254	293	9,080	18,010
September	586	260	383	11,479	22,770
Water year 1934	3,730	254	689	251,610	499,100
October 1934	511	351	408	12,650	25,090
November	400	324	363	10,902	21,620
December	393	270	334	10,368	20,560
Calendar year 1934	3,730	‡254	673	245,498	486,900
January 1935	379	179	290	8,987	17,830
February	310	194	264	7,390	14,660
March	365	209	278	8,625	17,110
April	879	310	553	16,582	32,890
May	3,840	720	1,665	51,617	102,400
June	10,800	2,500	6,419	193,570	382,000
July	4,340	1,380	2,689	85,370	165,400
August	1,510	622	916	28,407	56,340
September	1,080	488	728	21,855	43,310
Water year 1935	10,800	179	1,242	453,303	899,200
October 1935	810	544	617	19,128	37,940
November	544	408	485	14,537	28,830
December	514	342	420	13,011	25,810
Calendar year 1935	10,800	179	1,277	466,059	924,500
January 1936	483	310	396	12,269	24,340
February	408	317	352	10,202	20,240
March	402	330	357	11,066	21,950
April	3,270	310	1,591	47,718	94,650
May	7,740	2,420	5,548	171,990	341,100
June	7,560	2,840	4,438	133,140	264,100
July	2,390	931	1,466	45,451	90,150
August	1,480	647	976	30,241	59,980
September	846	544	653	19,600	38,880
Water year 1936	7,740	310	1,444	528,353	1,048,000
October 1936	702	499	579	17,941	35,590
November	539	389	470	14,104	27,970
December	430	330	382	11,833	23,470
Calendar year 1936	7,740	310	1,436	525,555	1,042,000
January 1937	394	286	344	†10,677	21,180
February	380	310	344	†9,634	19,110
March	406	315	357	11,056	21,930
April	1,140	335	671	20,132	39,930
May	6,110	813	3,935	121,973	241,900
June	4,400	2,110	3,224	96,720	191,800
July	2,470	759	1,540	47,744	94,700
August	870	430	583	18,073	35,850
September	777	436	599	17,977	35,660
Water year 1937	6,110	286	1,090	397,864	789,100
October 1937	718	506	584	18,103	35,910
November	574	400	494	14,807	29,370
December	473	300	428	13,261	26,300
Calendar year 1937	6,110	286	1,096	400,157	793,600
January 1938	492	320	372	11,546	22,900
February	362	277	315	8,824	17,500
March	546	340	393	12,180	24,160
April	3,170	340	1,082	32,463	64,390
May	7,930	1,320	3,555	110,190	218,600
June	11,000	5,540	7,515	225,450	447,200
July	5,910	1,590	3,026	93,820	186,100
August	1,500	670	1,028	31,870	63,210
September	1,400	611	980	29,413	58,340
Water year 1938	11,000	277	1,649	601,927	1,194,000

Yearly discharge of Roaring Fork at Glenwood Springs, Colo., 1906-9, 1911-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1906	‡1,871	1,355,000	1,888	1,366,000
1907	1,834	1,328,000	1,817	1,315,000
1908	1,202	872,600	1,174	852,600
1909	1,813	1,313,000	-	-
1911	a1,688	a1,222,000	1,790	1,296,000
1912	2,254	1,636,000	2,201	1,598,000
1913	1,400	1,013,000	1,378	997,800
1914	2,548	1,845,000	2,538	1,837,000
1915	1,034	748,500	1,011	732,000
1916	1,696	1,231,000	1,769	1,284,000
1917	2,021	1,463,000	1,991	1,441,000
1918	1,881	1,362,000	1,896	1,372,000
1919	1,262	913,900	1,237	895,400
1920	1,868	1,356,000	1,867	1,355,000
1921	1,775	1,285,000	1,760	1,274,000
1922	1,481	1,072,000	1,494	1,082,000
1923	1,708	1,236,000	1,718	1,244,000
1924	1,364	990,400	1,338	971,300
1925	1,352	978,500	1,398	1,012,000
1926	1,364	987,600	1,331	963,800
1927	1,616	1,170,000	1,652	1,196,000
1928	1,515	1,100,000	1,473	1,069,000
1929	1,666	1,206,000	1,748	1,266,000
1930	1,304	944,100	1,212	877,700
1931	757	547,900	749	542,200
1932	1,572	1,141,000	1,597	1,160,000
1933	1,310	948,600	1,274	922,400
1934	689	499,100	673	486,900
1935	1,242	899,200	1,277	924,500
1936	1,444	1,048,000	1,436	1,042,000
1937	1,090	789,100	1,096	793,600
1938	1,649	1,194,000	-	-

a Erroneously published for 1910 in Water-Supply Paper 617.

COLORADO RIVER NEAR CAMEO, COLO.

Location.- Lat. 39°13', long. 108°15', in sec. 6, T. 10 S., R. 97 W., 3 miles upstream from diversion dam for Government high-line canal, 3.4 miles upstream from Plateau Creek, and 5 miles northeast of Cameo.

Drainage area.- 8,055 square miles.

Records available.- October 1933 to September 1938.

Average discharge.- 5 years (water years, 1934-38), 4,129 second-feet.

Extremes.- 1933-38: Maximum discharge, 36,000 second-feet June 16, 1935 (gage height, 10.91 feet); minimum daily discharge, 738 second-feet Feb. 28, 1935.

Gage.- Water-stage recorder 3 miles upstream from diversion dam for Government high-line canal, since Oct. 10, 1934.

Cooperation.- Records collected in collaboration with office of State engineer. Records for water year 1934 furnished by U. S. Bureau of Reclamation.

Remarks.- Records for 1934, fair; for 1935-38, good below 2,500 second-feet and excellent above. Records Oct. 1, 1933, to Oct. 9, 1934, are combined records of Colorado River near Palisade and Government high-line canal without consideration of Plateau Creek except as it was known to produce a negligible increase in Colorado River during the extremely low flow of 1934. Winter records estimated or computed on basis of combined flow of Colorado River and Roaring Fork at Glenwood Springs. Many diversions for irrigation above station.

Monthly summary of discharge of Colorado River near Cameo, Colo., 1933-38

(† Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	1,980	1,320	1,599	49,560	98,300
November	1,590	1,200	1,435	43,040	85,370
December	1,640	1,200	1,415	43,860	87,000
January 1934	2,020	1,320	1,421	44,060	87,390
February	1,460	1,290	1,369	38,330	76,030
March	1,840	1,320	1,485	46,040	91,320
April	6,140	1,670	3,259	97,770	193,900
May	14,700	5,850	10,250	317,610	630,000
June	9,660	2,130	4,308	129,250	256,400
July	2,100	893	1,515	46,973	93,170
August	2,220	994	1,405	43,564	86,410
September	2,080	970	1,243	37,297	73,980
Water year 1934	14,700	893	2,568	937,354	1,859,000
October 1934	1,420	900	1,084	†33,591	66,630
November	1,170	864	1,038	31,125	61,740
December	1,220	855	1,004	†31,114	61,710
Calendar year 1934	14,700	855	2,457	896,724	1,779,000
January 1935	1,360	770	1,002	†31,066	61,620
February	1,060	738	941	26,347	52,260
March	1,220	846	1,020	31,634	62,750
April	3,080	1,160	1,942	58,250	115,500
May	14,100	2,410	5,811	180,140	357,300
June	34,900	11,300	21,380	641,300	1,272,000
July	13,900	3,540	7,738	239,870	475,800
August	4,470	1,870	2,552	79,110	156,900
September	2,490	1,320	1,961	58,820	116,700
Water year 1935	34,900	738	3,952	1,442,367	2,861,000
October 1935	2,290	1,430	1,764	54,670	108,400
November	1,870	1,320	1,568	47,040	93,300
December	1,380	910	1,192	†36,960	73,310
Calendar year 1935	34,900	738	4,069	1,485,207	2,946,000
January 1936	1,330	890	1,199	†37,160	73,710
February	1,510	1,010	1,188	†34,450	68,330
March	1,440	1,080	1,232	38,160	75,730
April	12,300	847	5,536	166,087	329,400
May	25,500	9,550	18,990	588,720	1,168,000
June	26,000	10,300	15,840	475,200	942,500
July	9,760	3,580	5,652	175,200	347,500
August	5,570	2,240	3,818	118,370	234,800
September	2,850	1,420	2,054	†61,620	122,200
Water year 1936	26,000	847	5,010	1,833,657	3,637,000

Monthly summary of discharge of Colorado River near Cameo, Colo., 1933-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-fee
October 1936	2,000	1,330	1,775	†55,020	109,10
November	1,850	1,190	1,512	†45,360	89,97
December	1,430	1,000	1,243	†38,530	76,42
Calendar year 1936	26,000	847	5,011	1,833,897	3,638,00
January 1937	1,390	960	1,145	†35,800	70,41
February	1,450	1,050	1,266	†35,500	70,41
March	1,780	1,200	1,464	†45,390	90,03
April	4,280	1,270	2,574	77,210	153,10
May	19,400	3,210	12,100	375,160	744,10
June	15,000	8,000	9,896	296,870	588,80
July	7,400	2,700	4,915	152,350	302,20
August	2,800	1,480	2,058	63,810	126,60
September	2,320	1,700	1,953	58,580	116,20
Water year 1937	19,400	960	3,505	1,279,280	2,537,00
October 1937	2,920	1,670	1,990	61,680	122,30
November	1,970	1,230	1,746	52,370	103,90
December	1,940	1,170	1,495	†46,340	91,91
Calendar year 1937	19,400	960	3,564	1,300,760	2,580,00
January 1938	1,550	1,120	1,265	†39,820	78,95
February	1,820	1,080	1,290	†36,130	71,66
March	3,970	1,300	1,917	†59,420	117,90
April	12,500	1,250	4,628	138,840	275,40
May	26,800	6,040	14,090	436,690	866,20
June	30,500	19,800	24,570	737,200	1,462,00
July	19,200	4,170	8,360	259,150	514,00
August	3,890	1,930	2,770	85,880	170,30
September	4,310	2,050	3,142	94,270	187,00
Water year 1938	30,500	1,080	5,610	2,047,790	4,062,00

Yearly discharge of Colorado River near Cameo, Colo., 1934-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1934	2,568	1,859,000	2,457	1,779,000
1935	3,952	2,861,000	4,069	2,946,000
1936	5,010	3,637,000	5,011	3,638,000
1937	3,505	2,537,000	3,564	2,580,000
1938	5,610	4,062,000	-	-

PLATEAU CREEK NEAR CAMEO, COLO.

Location.- Lat. 39°11', long. 108°16', in SW¼ sec. 18, T. 10 S., R. 97 W., 1.1 miles upstream from mouth, and 4 miles northeast of Cameo.

Drainage area.- 604 square miles.

Records available.- April 1936 to September 1938.

Extremes.- 1936-38: Maximum discharge, 2,550 second-feet May 29, 1938; minimum daily discharge, 19 second-feet July 24, 1936. Practically no flow in late summer of 1934.

Gage.- Water-stage recorder on right bank 1.1 miles from mouth of Plateau Creek since Aug. 26, 1936. Staff gage at same site and datum, read to hundredths twice daily Apr. 26 to Aug. 25, 1936.

Cooperation.- Records collected in collaboration with office of State engineer.

Remarks.- Records good except those for periods of ice-effect each winter, which were computed on basis of discharge measurements and weather records and are fair. Many small reservoirs on headwaters, and many diversions for irrigation above station.

Monthly summary of discharge of Plateau Creek near Cameo, Colo., 1936-38

(† Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 26-30, 1936	771	664	702	3,508	6,960
May	1,340	277	673	20,860	41,380
June	358	39	148	4,437	8,800
July	62	19	30.2	936	1,860
August	75	26	36.2	1,122	2,230
September	44	27	33.4	1,001	1,990
October 1936	66	39	50.7	1,573	3,120
November	92	50	64.1	1,924	3,820
December	82	31	60.3	†1,869	3,710
January 1937	68	32	52.0	†1,613	3,200
February	72	36	49.5	†1,387	2,750
March	109	52	73.2	2,270	4,500
April	394	59	176	5,268	10,450
May	1,500	184	870	26,963	53,480
June	519	116	251	7,528	14,930
July	496	33	118	3,649	7,240
August	129	23	38.8	1,204	2,390
September	66	36	45.1	1,353	2,680
Water year 1937	1,500	23	155	56,601	112,300
October 1937	204	54	83.9	2,602	5,160
November	122	61	76.5	2,294	4,550
December	143	61	76.8	†2,443	4,850
Calendar year 1937	1,500	23	160	58,574	116,200
January 1938	80	65	72.1	†2,234	4,430
February	124	54	74.2	†2,079	4,120
March	176	84	113	3,490	6,920
April	1,500	103	507	15,199	30,150
May	2,160	413	1,198	37,143	73,670
June	2,000	463	1,117	33,520	66,490
July	458	58	143	4,438	8,800
August	93	47	60.8	1,886	3,740
September	394	71	139	4,164	8,260
Water year 1938	2,160	47	305	111,492	221,100

Yearly discharge of Plateau Creek near Cameo, Colo., 1937-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1937	155	112,300	160	116,200
1938	305	221,100	-	-

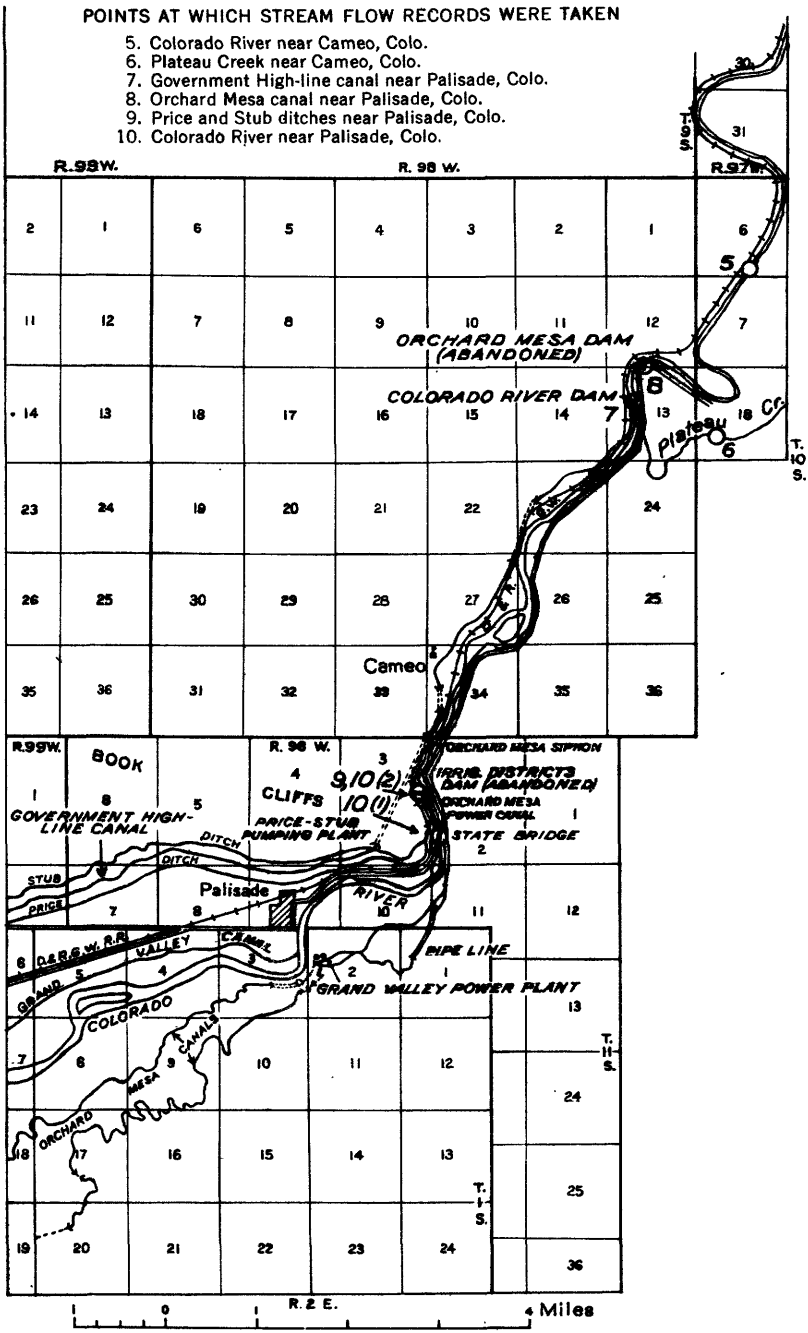


Figure 1.- Sketch map of Grand Valley, Colo.

COLORADO RIVER ABOVE DIVERSIONS TO GRAND VALLEY, COLO.

Records from no single gaging station will give the runoff from Colorado River Basin above Grand Valley. Such runoff has been determined by combining the records of Colorado River near Cameo (pl. 6, A) and Plateau Creek near Cameo since establishment of those stations, and prior to that time by combining the records of Colorado River near Palisade and diversions to Grand Valley from Colorado River above that station. The relation of the gaging stations to the tributaries and diversions is shown in figure 1. The relation to Grand Valley, and the reason for including Plateau Creek in Colorado River Basin above Grand Valley are shown on the general map of the Colorado River Basin (pl. 1).

Given below is a table showing yearly discharge from Colorado River Basin, including Plateau Creek, above Grand Valley. This table was obtained in the following manner:

1897-1901: The yearly runoff in acre-feet was computed for both calendar and water years in the same manner as for the table on page 42 of Water-Supply Paper 617, viz., for the period prior to Sept. 30, 1899, by adding an estimated 50,000 acre-feet per year diverted from Colorado River below Palisade to Grand Valley canal, plus that diverted to Price and Stub ditches above Palisade, to the runoff in acre-feet of Colorado River above Gunnison River at Grand Junction, Colo., and for the period after Sept. 30, 1899, by taking 152 (corrected) percent of the runoff in acre-feet of Colorado River above Roaring Fork at Glenwood Springs, Colo., plus that diverted to Price and Stub ditches.

1897-1909: In computing this table the water diverted by Price and Stub ditches during each calendar year was assumed to be the same as that diverted during the corresponding water year.

1902-34: The yearly discharge is the sum of the yearly discharge at the Palisade gaging station plus diversions to Grand Valley from the river above that station.

1935-38: The yearly discharge is the sum of the discharges of Colorado River and Plateau Creek at the stations near Cameo, including estimated discharge of Plateau Creek, October 1935 to April 1936.

The average discharge for 42 years (water years, 1897-1938) is 5,356 second-feet, and the corresponding runoff is 3,880,000 acre-feet.

Yearly discharge of Colorado River above diversions to Grand Valley, Colo., 1897-1938

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1897	6,340	‡4,590,000	6,460	4,680,000
1898	3,810	2,760,000	3,620	2,620,000
1899	7,030	‡5,090,000	7,160	5,180,000
1900	4,590	3,320,000	4,500	3,260,000
1901	4,640	‡3,360,000	4,690	3,395,000
1902	2,975	2,154,000	2,884	2,088,000
1903	4,253	3,079,000	4,357	3,154,000
1904	4,605	3,343,000	4,604	3,342,000
1905	4,949	3,583,000	4,928	3,568,000
1906	6,086	4,406,000	6,219	4,502,000
1907	6,400	4,633,000	6,373	4,614,000
1908	3,901	2,832,000	3,816	2,770,000
1909	6,900	4,996,000	7,007	5,073,000
1910	4,563	3,303,000	4,456	3,226,000
1911	5,015	3,631,000	5,190	3,757,000
1912	7,261	5,271,000	7,187	5,217,000
1913	4,439	3,214,000	4,380	3,171,000
1914	7,009	5,074,000	7,101	5,141,000
1915	4,162	3,013,000	4,028	2,916,000
1916	5,824	4,228,000	6,085	4,417,000
1917	7,829	‡5,668,000	7,669	5,552,000
1918	6,480	4,691,000	6,492	4,700,000
1919	4,126	2,987,000	4,018	2,909,000
1920	6,804	4,939,000	6,903	5,011,000
1921	7,192	‡5,207,000	7,194	5,208,000
1922	5,372	3,889,000	5,308	3,843,000
1923	6,368	4,610,000	6,530	4,727,000
1924	5,253	3,813,000	5,116	3,714,000
1925	4,603	3,332,000	4,681	3,389,000
1926	5,987	4,334,000	5,858	4,241,000
1927	6,171	4,468,000	6,344	4,593,000
1928	6,672	4,844,000	6,598	4,790,000
1929	7,280	5,270,000	7,433	5,381,000
1930	5,291	3,831,000	5,078	3,676,000
1931	2,833	2,051,000	2,680	1,940,000
1932	5,783	4,198,000	5,851	4,248,000
1933	4,810	3,482,000	4,802	3,476,000
1934	2,568	1,859,000	2,467	1,786,000
1935	4,085	2,957,000	4,206	3,045,000
1936	5,145	3,735,000	5,144	3,734,000
1937	3,660	2,650,000	3,724	2,696,000
1938	5,916	4,283,000	-	-

DIVERSIONS FROM COLORADO RIVER ABOVE STATION NEAR PALISADE, TO GRAND VALLEY, COLO.

Four canals (Government high-line, Orchard Mesa, Price, and Stub) have diverted water to Grand Valley from Colorado River above the gaging station near Palisade. These canals were gradually combined, so that since May 1923, the records for Government high-line canal include all water diverted above the gaging station. The table given below shows the total amount of water diverted by all canals, and is a combination of the individual records which follow. All records were collected and furnished by the Bureau of Reclamation.

Canals were not operated through the winters prior to September 1933; occasional minor flow in winter may have occurred without being recorded. Tables of monthly discharge have been computed from daily discharge records furnished. Where not derived from monthly discharge as given in the tables, yearly discharge is taken from Water-Supply Paper 617, page 42, which presents a summary of the yearly records and estimates, 1897-1927. In the late summer of 1933, diversion by Government high-line canal was increased by beginning of operation of a new power plant on left side of river near Palisade. Water for this power development is diverted by Government high-line canal, passed through Orchard Mesa canal to the plant, and returned to the river downstream from the station on the river near Palisade.

The canal records supplement the records of discharge of Colorado River near Palisade, publication of which was discontinued Sept. 30, 1933, and so publication of canal records is also discontinued with that date.

Yearly diversions from Colorado River above station near Palisade, to Grand Valley, Colo., 1897-1933

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1897	10	7,300	-	-
1898	10	7,300	-	-
1899	10	7,300	-	-
1900	10	7,300	-	-
1901	10	7,300	-	-
1902	10	7,300	-	-
1903	14.2	10,300	-	-
1904	17.1	12,400	-	-
1905	19.8	14,300	-	-
1906	24.3	17,600	-	-
1907	29.4	21,300	-	-
1908	40.1	29,100	-	-
1909	22.9	16,600	-	-
1910	48.6	35,200	55.8	40,390
1911	139	100,700	151	109,100
1912	147	106,700	142	103,300
1913	171	123,700	180	129,900
1914	152	109,800	136	98,430
1915	175	126,700	179	129,500
1916	191	138,800	194	140,800
1917	218	157,700	217	157,300
1918	243	175,900	264	191,400
1919	302	218,400	301	218,200
1920	302	219,300	307	222,800
1921	324	234,500	307	222,200
1922	338	244,800	353	255,700
1923	352	254,800	342	247,200
1924	374	271,300	376	272,800
1925	369	267,000	369	267,000
1926	429	310,900	448	324,600
1927	417	302,200	420	304,100
1928	482	349,800	491	356,300
1929	464	336,000	453	327,700
1930	505	366,000	518	375,100
1931	534	386,800	513	371,400
1932	524	380,600	535	388,700
1933	682	494,000	-	-

Government high-line canal[a] near Palisade, Colo.

Government high-line canal (capacity, about 1,500 second-feet) diverts water from right side of Colorado River at diversion dam 3 miles downstream from station on river near Cameo, half a mile upstream from Plateau Creek, 5½ miles upstream from station on river near Palisade, 3 miles northeast of Cameo, and 6 miles northeast of Palisade. First water was turned into canal in June 1915. Flow stopped for brief periods in many months. Since May 1923, this has been the only diversion to Grand Valley taking out above the river station near Palisade.

a Also published as "Government canal" and "Grand Valley main canal" (not to be confused with Grand Valley canal).

Monthly summary of diversions from Colorado River to Government high-line canal near Palisade, Colo., 1915-33

(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
September 1915	245	0	128	3,846	7,630
Water year 1915	245	0	17.4	6,367	a12,630
October 1915	190	0	48.9	1,515	3,000
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1915	245	0	21.6	7,882	15,630
January 1916	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	143	0	112	3,463	6,870
June	111	92	99.0	2,971	5,890
July	193	82	101	3,130	6,210
August	198	0	74.8	2,320	4,600
September	83	9	74.5	2,234	4,430
Water year 1916	198	0	42.7	15,633	‡31,000
October 1916	65	0	24.9	771	1,530
November	24	0	10.4	312	619
December	0	0	0	0	0
Calendar year 1916	198	0	41.5	15,201	30,150
January 1917	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	68	0	45.1	1,352	2,680
May	126	39	92.9	2,879	5,710
June	185	123	150	4,497	8,920
July	194	184	191	5,922	11,750
August	196	186	190	5,890	11,680
September	194	48	140	4,205	8,340
Water year 1917	196	0	70.8	25,828	‡51,230
October 1917	55	46	49.8	1,544	3,060
November	62	6	49.4	1,483	2,940
December	62	0	13.1	407	807
Calendar year 1917	196	0	77.2	28,179	55,890
January 1918	0	0	0	0	0
February	0	0	0	0	0
March	47	0	5.6	174	345
April	130	45	64.7	1,941	3,850
May	221	137	174	5,397	10,700
June	293	160	238	7,148	14,180
July	223	174	201	6,226	12,350
August	213	203	210	6,513	12,920
September	217	113	155	4,656	9,240
Water year 1918	293	0	97.2	35,489	70,390
October 1918	135	91	111	3,451	6,840
November	97	0	65.9	1,976	3,920
December	0	0	0	0	0
Calendar year 1918	293	0	103	37,482	74,340
January 1919	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	230	0	127	3,807	7,550
May	458	98	298	9,240	18,330
June	474	354	450	13,515	26,810
July	466	405	437	13,551	26,880
August	413	216	357	11,064	21,950
September	486	217	283	8,492	16,820
Water year 1919	486	0	178	65,086	b129,100
October 1919	259	211	230	7,126	14,130
November	70	0	15.1	452	897
December	0	0	0	0	0
Calendar year 1919	486	0	184	67,237	133,400
January 1920	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	181	0	69.3	2,078	4,120
May	497	132	293	9,072	17,990
June	557	472	522	15,668	31,080
July	506	423	462	14,317	28,400
August	489	391	447	13,860	27,490
September	506	272	318	9,534	18,910
Water year 1920	557	0	197	72,107	‡143,000

a Includes 5,000 acre-feet estimated total diversion June to August.
b Revised.

Note.- No record available June to August 1915.

Monthly summary of diversions from Colorado River to Government high-line canal near Palisade, Colo., 1915-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	282	192	236	7,329	14,540
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1920	557	0	196	71,858	142,500
January 1921	0	0	0	0	0
February	0	0	0	0	0
March	127	0	67.7	2,099	4,160
April	293	121	201	6,022	11,940
May	438	297	408	12,660	25,110
June	524	396	438	13,137	26,060
July	543	420	486	15,079	29,910
August	426	0	294	9,099	18,050
September	319	28	238	7,132	14,150
Water year 1921	543	0	199	72,557	143,900
October 1921	288	44	221	6,855	13,600
November	205	0	41.0	1,231	2,440
December	0	0	0	0	0
Calendar year 1921	543	0	201	73,314	145,400
January 1922	0	0	0	0	0
February	0	0	0	0	0
March	115	0	39.0	1,210	2,400
April	244	92	159	4,776	9,470
May	535	268	430	13,333	26,450
June	590	527	546	16,385	32,500
July	586	496	514	15,939	31,610
August	479	374	444	13,776	27,320
September	383	318	341	10,241	20,310
Water year 1922	590	0	229	83,746	166,100
October 1922	322	109	266	8,236	16,340
November	114	0	7.5	225	446
December	0	0	0	0	0
Calendar year 1922	590	0	230	84,121	166,800
January 1923	0	0	0	0	0
February	0	0	0	0	0
March	176	0	39.2	1,216	2,410
April	321	176	230	6,899	13,680
May	761	321	589	18,258	36,210
June	858	380	760	22,807	45,240
July	832	734	776	24,047	47,700
August	761	628	726	22,502	44,630
September	694	391	602	18,071	35,840
Water year 1923	858	0	335	122,261	b242,500
October 1923	328	254	322	9,988	19,810
November	254	0	29.1	874	1,730
December	0	0	0	0	0
Calendar year 1923	858	0	342	124,662	247,200
January 1924	0	0	0	0	0
February	0	0	0	0	0
March	40	0	14.4	445	883
April	710	100	419	12,575	24,940
May	805	500	746	23,140	45,900
June	895	630	757	22,700	45,020
July	895	805	826	25,620	50,820
August	825	783	791	24,528	48,650
September	783	430	564	16,907	33,530
Water year 1924	895	0	374	136,777	‡271,300
October 1924	455	115	345	10,695	21,210
November	235	0	b31.2	937	b1,860
December	0	0	0	0	0
Calendar year 1924	895	0	375	137,547	272,800
January 1925	0	0	0	0	0
February	0	0	0	0	0
March	159	0	‡30.8	954	‡1,890
April	‡764	159	‡363	10,885	‡21,590
May	894	708	846	26,217	52,000
June	890	704	814	24,407	48,410
July	818	523	721	22,350	44,330
August	885	591	‡748	23,173	‡45,960
September	579	467	‡500	14,985	‡29,720
Water year 1925	894	0	‡369	134,603	‡267,000

b Revised.

Monthly summary of diversions from Colorado River to Government high-line canal near Palisade, Colo., 1915-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	584	0	353	10,931	21,680
November	370	0	24.7	740	1,470
December	0	0	0	0	0
Calendar year 1925	894	0	369	134,642	267,000
January 1926	0	0	0	0	0
February	0	0	0	0	0
March	328	0	128	3,976	7,890
April	796	328	494	14,812	29,380
May	938	552	844	26,172	51,910
June	1,010	699	849	25,483	50,540
July	997	796	863	26,743	53,040
August	893	587	841	26,076	51,720
September	893	628	727	21,805	43,250
Water year 1926	1,010	0	429	156,738	‡310,900
October 1926	637	415	465	14,417	28,600
November	439	0	95.8	2,874	5,700
December	204	0	41.7	1,292	2,560
Calendar year 1926	1,010	0	448	163,650	324,600
January 1927	153	0	16.5	513	1,020
February	153	0	21.0	587	1,160
March	336	0	48.8	1,514	3,000
April	734	336	479	14,374	28,510
May	938	780	893	27,670	54,880
June	911	664	813	24,403	48,400
July	982	823	887	27,511	54,570
August	947	0	660	20,446	40,550
September	672	477	559	16,780	33,280
Water year 1927	982	0	417	152,381	302,200
October 1927	518	477	485	15,033	29,820
November	501	0	150	4,509	8,940
December	0	0	0	0	0
Calendar year 1927	982	0	420	153,334	304,100
January 1928	0	0	0	0	0
February	0	0	0	0	0
March	415	0	87.4	2,712	5,380
April	837	391	582	17,475	34,660
May	920	814	868	26,905	53,370
June	1,070	709	904	27,103	53,760
July	1,070	758	959	29,712	58,930
August	1,020	824	949	29,457	58,430
September	872	617	782	23,456	46,520
Water year 1928	1,070	0	482	176,362	349,800
October 1928	617	315	543	16,839	33,400
November	510	0	198	5,954	11,810
December	0	0	0	0	0
Calendar year 1928	1,070	0	491	179,613	356,300
January 1929	0	0	0	0	0
February	0	0	0	0	0
March	225	0	36.2	1,122	2,230
April	534	0	314	9,412	18,670
May	985	510	854	26,464	52,490
June	1,090	922	963	28,879	57,280
July	1,100	947	1,043	32,342	64,150
August	1,100	722	942	29,211	57,940
September	1,100	600	640	19,192	38,070
Water year 1929	1,100	0	464	169,415	336,000
October 1929	600	600	600	18,600	36,890
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1929	1,100	0	453	165,222	327,700
January 1930	0	0	0	0	0
February	0	0	0	0	0
March	286	0	49.0	1,519	3,010
April	882	286	597	17,921	35,550
May	984	882	921	28,560	56,650
June	1,040	984	995	29,852	59,210
July	1,090	1,000	1,053	32,629	64,720
August	1,050	985	1,014	31,431	62,340
September	1,000	634	800	23,987	47,580
Water year 1930	1,090	0	505	184,499	366,000

Monthly summary of diversions from Colorado River to Government high-line canal near Palisade, Colo., 1915-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	634	550	567	17,566	34,840
November	550	0	188	5,654	11,210
December	0	0	0	0	0
Calendar year 1930	1,090	0	518	189,119	375,100
January 1931	0	0	0	0	0
February	0	0	0	0	0
March	323	C	82.6	2,560	5,080
April	923	398	629	18,878	37,440
May	1,090	486	921	28,555	56,640
June	1,090	1,050	1,056	31,690	62,860
July	1,100	932	1,075	33,333	66,120
August	1,100	985	1,062	32,919	65,290
September	1,040	583	795	23,837	47,280
Water year 1931	1,100	0	534	194,992	386,800
October 1931	583	486	498	15,452	30,650
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1931	1,100	0	513	187,224	371,400
January 1932	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	872	0	627	18,807	37,300
May	1,130	872	1,039	32,220	63,910
June	1,210	962	1,114	33,428	66,300
July	1,210	1,020	1,124	34,847	69,120
August	1,200	767	1,111	34,432	68,290
September	853	695	757	22,720	45,060
Water year 1932	1,210	0	524	191,906	380,600
October 1932	758	438	630	19,532	38,740
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1932	1,210	0	535	195,986	388,700
January 1933	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	1,240	406	756	22,674	44,970
May	1,360	1,180	1,256	38,942	77,240
June	1,390	1,360	1,378	41,340	82,000
July	1,390	1,390	1,390	43,090	85,470
August	1,500	1,390	1,446	44,830	88,920
September	1,420	1,140	1,288	38,652	76,670
Water year 1933	1,500	0	682	249,060	494,000

Yearly diversions from Colorado River to Government high-line canal near Palisade, Colo., 1915-33

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1915	17.4	12,630	21.6	15,630
1916	42.7	‡31,000	41.5	30,150
1917	70.8	‡51,230	77.2	55,890
1918	97.2	70,390	103	74,340
1919	178	a129,100	184	133,400
1920	197	‡143,000	196	142,500
1921	199	143,900	201	145,400
1922	229	166,100	230	166,800
1923	335	a242,500	342	247,200
1924	374	‡271,300	376	272,800
1925	‡369	‡267,000	369	267,000
1926	429	‡310,900	448	324,600
1927	417	302,200	420	304,100
1928	482	349,800	491	356,300
1929	464	336,000	453	327,700
1930	505	366,000	518	375,100
1931	534	386,800	513	371,400
1932	524	380,600	535	388,700
1933	682	494,000	-	-

a Revised.

Orchard Mesa canal near Palisade, Colo.

Orchard Mesa canal diverted water from left side of Colorado River half a mile upstream from site of Government diversion dam from 1910 to 1922. Beginning May 10, 1923, it was supplied from Government high-line canal through a siphon 5 miles downstream under Colorado River, and its flow included in record of that canal. Flow stopped for brief periods in many months.

Monthly summary of diversions from Colorado River to Orchard Mesa canal near Palisade, Colo., 1911-17, 1919, 1921-22

(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
March 1911	208	0	63.0	1,953	3,870
April	197	0	135	4,037	8,010
May	189	0	133	4,123	8,180
June	219	0	140	4,204	8,340
July	243	0	213	6,617	13,120
August	243	0	229	7,110	14,100
September	243	23	193	5,789	11,480
October 1911	175	0	139	4,305	8,540
November	175	0	57.3	1,720	3,410
December	0	0	0	0	0
Calendar year 1911	243	0	109	39,858	79,050
January 1912	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	207	0	96.8	2,903	5,760
May	240	0	154	4,783	9,490
June	286	0	194	5,811	11,530
July	298	0	168	5,220	10,350
August	311	0	209	6,493	12,880
September	292	207	253	7,596	15,070
Water year 1912	311	0	106	38,831	‡77,030
October 1912	251	0	127	3,937	7,810
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1912	311	0	100	36,743	72,890
January 1913	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	268	0	120	3,587	7,110
May	298	223	262	8,109	16,080
June	292	0	203	6,091	12,080
July	310	251	279	8,657	17,170
August	298	0	259	8,042	15,950
September	292	0	202	6,062	12,020
Water year 1913	310	0	122	44,485	‡88,220
October 1913	274	175	219	6,804	13,500
November	23	0	12.4	373	740
December	0	0	0	0	0
Calendar year 1913	310	0	131	47,725	94,650
January 1914	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	93	0	11.6	348	690
May	262	57	212	6,579	13,050
June	274	0	205	6,137	12,170
July	274	0	228	7,061	14,010
August	274	0	214	6,636	13,160
September	274	23	203	6,097	12,090
* Water year 1914	274	0	110	40,035	79,410
October 1914	31	16	27.5	853	1,690
November	126	0	52.8	1,584	3,140
December	0	0	0	0	0
Calendar year 1914	274	0	96.7	35,295	70,000
January 1915	0	0	0	0	0
February	0	0	0	0	0
March	135	0	16.4	509	1,010
April	274	0	180	5,413	10,740
May	274	0	238	7,364	14,610
June	286	23	235	7,048	13,980
July	274	0	160	4,950	9,820
August	286	0	221	6,850	13,590
September	274	135	248	7,433	14,740
Water year 1915	286	0	115	42,004	‡83,320

Monthly summary of diversions from Colorado River to Orchard Mesa canal near Palisade, Colo., 1911-17, 1919, 1921-22--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	77	0	21.7	673	1,330
November	117	0	18.6	559	1,110
December	0	0	0	0	0
Calendar year 1915	286	0	112	40,799	80,930
January 1916	0	0	0	0	0
February	0	0	0	0	0
March	23	0	1.9	59	117
April	240	19	107	3,200	6,350
May	286	0	237	7,335	14,550
June	274	218	256	7,666	15,210
July	286	0	228	7,053	13,990
August	262	0	192	5,946	11,790
September	262	31	227	6,817	13,520
Water year 1916	286	0	107	39,308	77,970
October 1916	240	27	112	3,457	6,860
November	77	0	10.9	328	651
December	0	0	0	0	0
Calendar year 1916	286	0	114	41,861	83,040
January 1917	0	0	0	0	0
February	0	0	0	0	0
March	89	0	11.3	350	694
April	215	0	99.6	2,987	5,920
May	244	0	166	5,141	10,200
June	234	196	220	6,596	13,080
July	254	152	239	7,420	14,720
August	264	244	249	7,734	15,340
September	254	116	217	6,513	12,920
Water year 1917	264	0	111	40,526	80,380
October 1917	12	6.5	8.5	264	524
November	6.5	6.5	6.5	195	387
December	0	0	0	0	0
Calendar year 1917	264	0	102	37,200	73,780
January 1919	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	56	0	2.7	82	163
May	264	112	236	7,321	14,520
June	280	264	273	8,184	16,230
July	280	0	231	7,175	14,230
August	286	0	213	6,609	13,110
September	275	169	246	7,388	14,650
October 1919	229	178	193	5,996	11,890
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1919	286	0	117	42,755	84,790
January 1921	-	-	0	0	0
February	-	-	0	0	0
March	-	-	0	0	0
April	-	-	103	3,078	6,105
May	-	-	257	7,965	15,800
June	-	-	264	7,926	15,720
July	-	-	221	6,839	13,560
August	-	-	158	4,906	9,731
September	-	-	232	6,971	13,830
October 1921	-	-	23.0	712	1,412
November	-	-	10.9	327	649
December	-	-	0	0	0
Calendar year 1921	-	-	106	38,724	76,810
January 1922	-	-	0	0	0
February	-	-	0	0	0
March	-	-	0	0	0
April	-	-	130	3,895	7,726
May	-	-	240	7,443	14,760
June	-	-	242	7,273	14,430
July	-	-	245	7,604	15,080
August	-	-	212	6,577	13,050
September	-	-	194	5,827	11,560
Water year 1922	-	-	109	39,658	78,670
October 1922	-	-	200	6,188	12,270
November	-	-	0	0	0
December	-	-	0	0	0
Calendar year 1922	-	-	123	44,807	88,880

Yearly diversions from Colorado River to Orchard Mesa canal near Palisade, Colo., 1910-23

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1910	14.6	10,600	18.9	13,700
1911	97.0	70,200	109	79,050
1912	106	‡77,030	100	72,890
1913	122	‡88,220	131	94,650
1914	110	79,410	96.7	70,000
1915	115	‡83,320	112	80,930
1916	107	‡77,970	114	83,040
1917	111	80,380	102	73,780
1918	99.6	72,100	117	84,690
1919	119	86,400	117	84,790
1920	105	76,300	111	80,260
1921	125	90,600	106	76,810
1922	109	78,670	123	88,880
1923	17.0	12,270	0	0

Note.- Records of runoff for water years 1910, 1911, and 1918-21 taken from Water-Supply Paper 617, p. 42, and for calendar years 1910, 1918, and 1920 computed from water-year runoff and partial records of monthly runoff; mean discharge computed from runoff.

Price and Stub ditches near Palisade, Colo.

Price ditch and Stub ditch diverted water from right side of Colorado River at diversion dam half a mile upstream from station on river near Palisade, from some time prior to 1897 until 1918. Flow stopped for brief periods in many months. Beginning in April 1919, these two ditches were supplied from Government high-line canal, and their flow included in records of that canal. After Mar. 1, 1932, their former diversion dam was used as the control for the gaging station on the river near Palisade.

Monthly summary of diversions from Colorado River to Price ditch near Palisade, Colo., 1909-17

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1909	40	0	9.0	271	538
May	59	0	24.0	744	1,480
June	60	0	30.8	924	1,830
July	64	0	34.5	1,071	2,120
August	53	0	32.5	1,008	2,000
September	48	0	22.0	661	1,310
October 1909	41	0	23.9	741	1,470
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1909	64	0	14.8	5,420	10,750
January 1910	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	88	0	42.0	1,303	2,580
June	85	0	70.6	2,118	4,200
July	92	0	64.1	1,987	3,940
August	92	54	70.0	2,171	4,310
September	78	0	43.5	1,305	2,590
Water year 1910	92	0	26.4	9,625	19,090

Monthly summary of diversions from Colorado River to Price ditch near Palisade, Colo., 1909-17--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1910	66	10	41.7	1,292	2,560
November	43	0	15.6	468	928
December	0	0	0	0	0
Calendar year 1910	92	0	29.2	10,644	21,110
January 1911	0	0	0	0	0
February	0	0	0	0	0
March	30	0	14.1	437	867
April	43	0	24.6	738	1,460
May	85	0	67.9	2,106	4,180
June	85	0	70.2	2,107	4,180
July	88	0	60.6	1,879	3,730
August	88	0	65.1	2,019	4,000
September	76	0	52.2	1,565	3,100
Water year 1911	88	0	34.6	12,611	25,000
October 1911	70	0	21.5	666	1,320
November	43	0	24.3	728	1,440
December	0	0	0	0	0
Calendar year 1911	88	0	33.5	12,245	24,280
January 1912	0	0	0	0	0
February	0	0	0	0	0
March	23	0	6.5	203	403
April	35	0	18.6	557	1,100
May	84	0	46.2	1,432	2,840
June	90	0	73.3	2,198	4,360
July	90	0	74.3	2,303	4,570
August	99	0	70.5	2,186	4,340
September	84	0	36.0	1,079	2,140
Water year 1912	99	0	31.0	11,352	22,510
October 1912	54	0	32.2	1,000	1,980
November	37	0	17.0	509	1,010
December	0	0	0	0	0
Calendar year 1912	99	0	31.3	11,467	22,740
January 1913	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	70	0	36.3	1,088	2,160
May	88	0	71.4	2,213	4,390
June	95	0	72.4	2,171	4,310
July	95	0	85.4	2,647	5,250
August	102	0	76.7	2,378	4,720
September	64	0	33.3	1,000	1,980
Water year 1913	102	0	35.6	13,006	25,800
October 1913	43	0	24.4	756	1,500
November	48	0	28.2	845.0	1,680
December	0	0	0	0	0
Calendar year 1913	102	0	35.9	13,098	25,990
January 1914	0	0	0	0	0
February	0	0	0	0	0
March	26	0	6.2	191	379
April	30	0	19.8	594	1,180
May	88	0	45.4	1,408	2,790
June	88	0	71.7	2,152	4,270
July	102	0	74.3	2,304	4,570
August	95	0	70.2	2,178	4,320
September	61	0	36.1	1,082	2,150
Water year 1914	102	0	31.5	11,510	22,840
October 1914	38	0	17.9	555	1,100
November	30	0	14.7	441	875
December	0	0	0	0	0
Calendar year 1914	102	0	29.9	10,905	21,630
January 1915	0	0	0	0	0
February	0	0	0	0	0
March	30	0	6.2	191	379
April	76	0	35.6	1,068	2,120
May	95	0	52.6	1,631	3,240
June	95	23	69.5	2,086	4,140
July	102	0	79.7	2,472	4,900
August	88	0	70.9	2,197	4,360
September	58	0	37.3	1,119	2,220
Water year 1915	102	0	32.2	11,760	23,330

Monthly summary of diversions from Colorado River to Price ditch near Palisade, Colo., 1909-17--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	76	0	39.3	1,217	2,410
November	64	0	23.0	690	1,370
December	0	0	0	0	0
Calendar year 1915	102	0	34.7	12,671	25,140
January 1916	0	0	0	0	0
February	0	0	0	0	0
March	23	0	8.3	256	508
April	61	0	28.6	859	1,700
May	82	0	58.8	1,824	3,620
June	102	0	74.6	2,238	4,440
July	102	0	67.8	2,102	4,170
August	95	0	48.5	1,505	2,990
September	82	0	51.6	1,549	3,070
Water year 1916	102	0	33.4	12,240	24,280
October 1916	53	0	19.9	618	1,230
November	58	0	12.2	365	724
December	0	0	0	0	0
Calendar year 1916	102	0	30.9	11,316	22,450
January 1917	0	0	0	0	0
February	0	0	0	0	0
March	39	0	2.2	67	133
April	36	0	15.2	455	902
May	61	0	34.5	1,070	2,120
June	104	0	69.1	2,072	4,110
July	110	0	82.0	2,543	5,040
August	92	0	69.0	2,139	4,240
September	92	0	41.9	1,258	2,500
Water year 1917	110	0	29.0	10,587	21,000
October 1917	39	0	30.9	959	1,900
November	50	0	22.4	672	1,330
December	0	0	0	0	0
Calendar year 1917	110	0	30.8	11,235	22,280

Monthly summary of diversions from Colorado River to Stub ditch near Palisade, Colo., 1910-17

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
May 1910	24	0	11.6	360	714
June	32	0	20.6	617	1,220
July	32	0	23.2	718	1,420
August	25	0	16.2	501	994
September	16	0	8.9	266	528
October 1910	12	0	8.6	266	528
November	11	0	2.9	88	175
December	0	0	0	0	0
Calendar year 1910	32	0	7.7	2,816	5,580
January 1911	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	33	0	4.6	142	282
June	30	6	23.3	699	1,390
July	33	0	13.6	422	837
August	36	0	22.2	689	1,370
September	33	0	15.8	473	938
Water year 1911	36	0	7.6	2,779	5,520
October 1911	14	0	7.3	226	448
November	19	0	8.2	245	486
December	0	0	0	0	0
Calendar year 1911	36	0	7.9	2,896	5,750
January 1912	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	14	0	9.1	273	541
May	20	0	13.3	413	819
June	24	3	13.2	395	783
July	26	0	19.5	603	1,200
August	37	0	25.4	788	1,560
September	37	0	21	649	1,290
Water year 1912	37	0	9.8	3,592	7,130

Monthly summary of diversions from Colorado River to Stub ditch near Palisade, Colo., 1910-17--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1912	22	0	13.7	425	843
November	19	0	9.9	298	591
December	0	0	0	0	0
Calendar year 1912	37	0	10.5	3,844	7,630
January 1913	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	26	0	10.7	321	637
May	31	0	25.2	780	1,550
June	36	0	24.3	729	1,450
July	38	0	34.2	1,060	2,100
August	38	0	29.3	909	1,800
September	35	0	11.4	343	680
Water year 1913	38	0	13.3	4,865	9,650
October 1913	17	0	10.2	316	627
November	19	0	7.5	225	446
December	0	0	0	0	0
Calendar year 1913	38	0	12.8	4,683	9,290
January 1914	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	10	0	5.5	166	329
May	26	0	14.3	442	877
June	28	0	18.9	567	1,120
July	31	0	25.9	804	1,590
August	31	0	26.3	815	1,620
Septe ber	25	0	15.8	473	938
Water year 1914	31	0	10.4	3,808	7,550
October 1914	16	0	3.7	115	228
November	8	0	1.7	50	99
December	0	0	0	0	0
Calendar year 1914	31	0	9.4	3,432	6,800
January 1915	0	0	0	0	0
February	0	0	0	0	0
March	7	0	.5	17	34
April	25	0	10.8	324	643
May	26	0	17.8	552	1,090
June	28	0	23.4	701	1,390
July	29	0	25.7	796	1,580
August	29	18	26.7	829	1,640
September	22	0	12.1	364	722
Water year 1915	29	0	10.3	3,748	7,430
October 1915	20	0	9.6	299	593
November	18	0	2.1	64	127
December	0	0	0	0	0
Calendar year 1915	29	0	10.8	3,946	7,820
January 1916	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	22	0	5.0	149	296
May	24	0	17.7	550	1,090
June	29	0	22.2	667	1,320
July	30	0	22.0	682	1,350
August	10	0	5.2	160	317
September	11	0	7.5	224	444
Water year 1916	30	0	7.6	2,795	5,540
October 1916	11	0	5.6	175	347
November	7	0	.4	12	24
December	0	0	0	0	0
Calendar year 1916	30	0	7.2	2,619	5,190
January 1917	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	8	0	2.6	77	153
May	16	0	9.1	282	559
June	16	0	11.0	330	655
July	25	0	17.2	534	1,060
August	28	0	24.0	745	1,480
September	26	0	13.1	394	781
Water year 1917	28	0	7.0	2,549	5,060

Monthly summary of diversions from Colorado River to Stub ditch near Palisade, Colo., 1910-17--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1917	13	0	11.3	351	696
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1917	28	0	7.4	2,713	5,380

Yearly diversions from Colorado River to Price and Stub ditches near Palisade, Colo., 1897-1919

(* Estimated; ‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1897	10	7,300	-	-
1898	10	7,300	-	-
1899	10	7,300	-	-
1900	10	7,300	-	-
1901	10	7,300	-	-
1902	10	7,300	-	-
1903	14.2	10,300	-	-
1904	17.1	12,400	-	-
1905	19.8	14,300	-	-
1906	24.3	17,600	-	-
1907	29.4	21,300	-	-
1908	40.1	29,100	-	-
1909	22.9	16,600	-	-
1910	34.0	24,600	36.9	26,690
1911	42.2	30,520	41.5	30,030
1912	40.8	a29,640	41.8	30,370
1913	49.0	35,450	48.7	35,280
1914	42.0	30,390	39.3	28,430
1915	42.5	30,760	45.5	32,960
1916	41.1	‡29,820	38.1	27,640
1917	36.0	26,060	38.2	27,660
1918	46.1	33,400	44.7	32,370
1919	4.0	*2,900	0	0

a Revised.

Note.- Records for water years 1911-17 and for calendar years 1910-17 are combinations of individual yearly records of the two ditches. Records of runoff for water years 1897-1910 and 1918 taken from Water-Supply Paper 617, p. 42, and for calendar year 1918 computed from water-year runoff and partial records of monthly runoff; mean discharge computed from runoff.

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COLORADO RIVER NEAR PALISADE, COLO.

Location.- In sec. 3, T. 11 S., R. 98 W., at former diversion dam, 2⅛ miles upstream from Palisade, 5 miles (revised) downstream from Plateau Creek, and 5⅛ miles downstream from diversion dam for Government high-line canal, since Mar. 1, 1932.
1902-31: In sec. 2, T. 11 S., R. 98 W., at steel highway bridge (State Bridge), half a mile downstream from later site, and 2 miles upstream from Palisade.

Drainage area.- 8,790 square miles.

Records available.- October 1901 to September 1933.

Average discharge.- 32 years (water years, 1902-33), 5,285 second-feet.

Extremes.- 1902-33: Maximum discharge observed, 52,400 second-feet June 16, 1921 (gage height, 24.4 feet); minimum observed, 177 second-feet Sept. 6, 7, 8, 19, 1933 (gage height, 0.30 foot; gage height at former gage, approximately 10.7 feet).

Gage.- Staff gage at diversion dam formerly used for Price ditch, 2⅛ miles upstream from Palisade, since Mar. 1, 1932; gage graduated to tenths, read once a day, probably to hundredths.
Apr. 9, 1902, to November 1931, chain gage on downstream side near mid-span of steel highway bridge (State Bridge) half a mile downstream, and 2 miles upstream from Palisade. No change in location or datum of gage during this period. Gage read once or twice a day, probably to hundredths.

Cooperation.- Bureau of Reclamation furnished records of daily discharge 1915-33, and most of field data 1910-14.

Remarks.- Discharge the same at both locations. Records probably good, except those for high and low stages which may be only fair; estimates fair. Discharge measurements made from one or another of three bridges. Conditions for measuring somewhat unfavorable, at high stages owing to unusually high velocities, and at low stages because of deep water and very low velocities. During 1932-33, discharge determined by use of weir formula applied to head on dam crest 325 feet long, with occasional checks by current-meter measurements. Records of low discharge during this period subject to uncertainty because of insensitive control, some diurnal fluctuation from power development upstream, and only one gage reading a day. Considerable ice-effect during most winters; discharge estimated from records of Colorado River and Roaring Fork at Glenwood Springs with allowance for inflow between. Water diverted for irrigation above and below station.

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1901	-	-	*1,650	51,150	101,500
November	-	-	*1,600	48,000	95,210
December	-	-	*1,400	43,400	86,080
January 1902	-	-	*1,250	38,750	76,860
February	-	-	*1,200	33,600	66,640
March	-	-	*1,200	37,200	73,790
April	3,230	1,080	1,698	50,950	101,100
May	18,000	4,400	12,190	377,770	749,300
June	14,800	3,420	8,646	259,380	514,500
July	7,600	1,350	2,199	68,160	135,200
August	1,460	1,030	1,213	37,590	74,560
September	1,550	1,080	1,217	36,520	72,440
Water year 1902	18,000	-	2,966	1,082,470	2,147,000
October 1902	1,500	1,340	1,413	43,810	86,900
November	-	-	*1,100	33,000	65,450
December	-	-	*1,050	32,550	64,560
Calendar year 1902	18,000	-	2,875	1,049,280	2,081,000
January 1903	-	-	*950	29,450	58,410
February	-	-	*950	26,600	52,760
March	-	-	*1,200	37,200	73,790
April	5,150	1,380	2,321	69,640	138,100
May	16,500	4,190	8,980	278,380	552,200
June	25,100	13,000	19,580	587,300	1,165,000
July	16,100	4,190	8,780	272,170	539,800
August	3,800	1,700	2,224	68,940	136,700
September	3,320	1,650	2,270	68,100	135,100
Water year 1903	25,100	-	4,239	1,547,150	3,069,000

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1903	2,880	1,700	2,055	63,700	126,300
November	-	-	*1,650	49,500	98,180
December	-	-	*1,100	34,100	67,640
Calendar year 1903	25,100	-	4,343	1,585,090	3,144,000
January 1904	-	-	*1,100	34,100	67,640
February	-	-	*1,150	33,350	66,150
March	-	-	*1,500	46,500	92,230
April	7,640	1,320	3,906	117,190	232,400
May	24,800	5,520	12,800	396,820	787,100
June	‡20,400	11,400	16,480	494,405	980,600
July	13,200	4,240	7,401	229,420	455,000
August	4,460	2,390	3,242	100,510	199,400
September	4,680	1,830	2,654	79,620	157,900
Water year 1904	24,800	-	‡4,588	1,679,215	3,331,000
October 1904	2,630	1,710	2,141	66,370	131,600
November	-	-	*1,500	45,000	89,260
December	-	-	*1,150	35,650	70,710
Calendar year 1904	24,800	-	4,587	1,678,935	3,330,000
January 1905	-	-	*1,200	37,200	73,790
February	-	-	*1,100	30,800	61,090
March	-	-	*1,450	44,950	89,160
April	6,000	1,500	2,644	79,335	157,400
May	24,900	6,120	13,080	405,330	804,000
June	35,900	13,500	24,440	733,080	1,454,000
July	12,400	3,440	6,084	188,590	374,100
August	4,600	1,720	2,527	78,325	155,400
September	2,280	1,610	1,830	54,890	108,900
Water year 1905	35,900	-	‡4,930	1,799,520	3,569,000
October 1905	1,890	1,610	1,747	54,160	107,400
November	-	-	*1,650	49,500	98,180
December	-	-	*1,150	35,650	70,710
Calendar year 1905	35,900	-	4,909	1,791,810	3,554,000
January 1906	-	-	*1,150	35,650	70,710
February	-	-	*1,220	34,160	67,760
March	-	-	*1,800	55,800	110,700
April	10,200	1,950	4,734	142,030	281,700
May	28,900	5,760	18,580	576,040	1,143,000
June	37,000	12,000	23,550	706,400	1,401,000
July	12,700	5,400	9,821	304,450	603,900
August	5,640	2,350	3,804	117,910	233,900
September	4,940	2,350	3,338	100,150	198,600
Water year 1906	37,000	-	‡6,060	2,211,900	‡4,388,000
October 1906	4,060	2,140	2,855	88,490	175,500
November	-	-	*1,820	54,600	108,300
December	-	-	*1,450	44,950	89,160
Calendar year 1906	37,000	-	6,194	2,260,630	4,484,000
January 1907	-	-	*1,320	40,920	81,160
February	-	-	*1,550	43,400	86,080
March	4,840	1,350	2,235	69,290	137,400
April	9,340	2,200	5,248	157,440	312,300
May	23,200	4,540	10,510	325,940	646,500
June	30,200	13,400	24,800	744,000	1,476,000
July	29,300	9,030	16,980	526,270	1,044,000
August	8,310	3,380	4,893	151,680	300,900
September	3,460	2,130	2,601	78,040	154,800
Water year 1907	30,200	-	‡6,370	2,325,020	4,612,000
October 1907	3,900	2,270	2,639	81,800	162,200
November	2,270	1,450	1,817	54,510	108,100
December	1,550	1,260	1,366	†42,360	84,020
Calendar year 1907	30,200	-	6,344	2,315,650	4,593,000
January 1908	-	-	*1,450	44,950	89,160
February	1,820	-	1,316	†38,160	75,690
March	2,000	1,300	1,626	50,400	99,970
April	6,930	1,550	3,898	116,940	231,900
May	10,600	3,640	6,723	208,410	413,400
June	20,300	8,180	14,570	436,990	866,800
July	9,810	3,210	5,673	175,850	348,800
August	4,840	2,270	3,548	109,980	218,100
September	2,270	1,550	1,756	52,690	104,500
Water year 1908	20,300	-	‡3,861	1,413,040	‡2,803,000

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1908	3,210	1,550	1,892	58,650	116,300
November	1,820	1,350	1,602	48,060	95,330
December	1,760	1,170	1,323	41,000	81,320
Calendar year 1908	20,300	-	‡3,776	1,382,080	‡2,741,000
January 1909	-	-	1,337	†41,440	82,200
February	-	-	1,196	†33,480	66,410
March	2,280	1,120	1,564	48,470	96,140
April	5,680	1,420	2,692	80,750	160,200
May	20,800	3,800	13,090	405,670	804,600
June	43,000	14,600	33,260	997,800	1,979,000
July	29,300	5,790	14,440	447,690	888,000
August	7,290	3,990	5,185	160,740	318,800
September	7,410	3,070	4,872	146,150	289,900
Water year 1909	43,000	-	6,876	2,509,900	4,978,000
October 1909	3,070	2,140	2,566	79,540	157,800
November	2,570	2,010	2,082	62,470	123,900
December	2,080	-	*1,450	44,950	89,160
Calendar year 1909	43,000	-	‡6,984	2,549,150	‡5,056,000
January 1910	-	-	*1,500	46,500	92,230
February	-	-	*1,400	39,200	77,750
March	4,810	2,280	3,475	107,720	213,700
April	15,400	3,070	5,851	175,520	348,100
May	22,500	9,650	13,130	407,140	807,600
June	27,100	6,580	14,340	430,060	853,000
July	6,810	2,010	3,711	115,030	228,200
August	4,290	1,530	2,332	72,280	143,400
September	2,900	1,530	2,237	67,100	133,100
Water year 1910	27,100	-	‡4,514	1,647,510	‡3,268,000
October 1910	2,570	1,530	1,834	56,840	112,700
November	2,500	1,370	1,657	49,710	98,600
December	1,530	1,050	1,256	38,940	77,240
Calendar year 1910	27,100	-	4,400	1,606,040	3,186,000
January 1911	2,800	-	1,350	†41,850	83,010
February	3,440	1,030	1,465	41,030	81,380
March	3,790	1,100	1,860	57,670	114,400
April	6,770	1,370	3,052	91,570	181,600
May	18,600	4,750	12,740	394,860	783,200
June	24,800	10,400	19,920	597,500	1,185,000
July	16,400	4,350	8,566	265,550	526,700
August	4,350	1,960	2,644	81,950	162,500
September	3,270	1,590	2,072	62,170	123,300
Water year 1911	24,800	-	‡4,876	1,779,640	‡3,530,000
October 1911	9,770	1,960	3,419	105,980	210,200
November	2,220	1,590	1,918	57,550	114,100
December	-	-	*1,350	41,850	83,010
Calendar year 1911	24,800	-	‡5,040	1,839,530	3,648,000
January 1912	-	-	*1,400	43,400	86,080
February	-	-	*1,380	40,020	79,380
March	4,050	1,320	1,758	54,500	108,100
April	3,650	2,080	2,715	81,440	161,500
May	33,600	4,260	15,580	483,110	958,200
June	43,400	17,200	30,620	918,500	1,822,000
July	28,900	11,200	17,240	534,400	1,060,000
August	12,200	2,620	5,457	169,180	335,600
September	3,280	2,080	2,446	73,370	145,500
Water year 1912	43,400	-	7,113	2,603,300	5,164,000
October 1912	3,460	2,210	2,519	78,080	154,900
November	2,480	1,590	2,015	60,460	119,900
December	-	-	*1,350	41,850	83,010
Calendar year 1912	43,400	-	7,045	2,578,310	5,114,000
January 1913	-	-	*1,340	41,540	82,390
February	-	-	*1,300	36,400	72,200
March	2,700	(a)	1,858	†57,600	114,200
April	8,030	2,700	5,252	157,550	312,500
May	20,800	8,180	13,290	411,990	817,200
June	20,300	8,640	13,150	394,640	782,800
July	7,880	2,780	4,926	152,720	302,900
August	2,620	1,280	1,851	57,370	113,800
September	3,780	1,280	2,254	67,630	134,100
Water year 1913	20,800	-	‡4,268	1,557,830	3,090,000

a Previously published figure discarded.

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1913	2,780	1,640	2,116	65,590	130,100
November	2,540	1,370	1,711	51,320	101,800
December	-	-	*1,250	38,750	76,860
Calendar year 1913	20,800	-	4,200	1,533,100	3,041,000
January 1914	-	-	*1,300	40,300	79,930
February	-	-	*1,350	37,800	74,980
March	2,700	1,320	1,872	58,030	115,100
April	6,080	2,250	4,340	130,210	258,300
May	38,800	5,720	20,830	645,660	1,281,000
June	42,800	17,800	29,660	889,700	1,765,000
July	17,400	6,880	10,850	336,220	666,900
August	8,640	2,780	4,287	132,910	263,600
September	3,580	2,120	2,525	75,760	150,300
Water year 1914	42,800	-	6,855	2,502,250	4,964,000
October 1914	7,880	2,250	3,307	102,510	203,300
November	2,620	1,320	1,835	55,050	109,200
December	-	-	*1,220	37,820	75,010
Calendar year 1914	42,800	-	6,964	2,541,970	5,043,000
January 1915	-	-	*1,230	38,130	75,630
February	-	-	*1,270	35,560	70,530
March	1,640	1,150	1,372	42,520	84,340
April	6,740	1,320	3,448	103,440	205,200
May	11,900	2,860	7,622	236,280	468,700
June	20,500	10,900	15,820	474,600	941,400
July	13,200	2,860	7,131	221,070	438,500
August	3,680	1,230	2,165	67,100	133,100
September	2,250	1,110	1,362	40,870	81,060
Water year 1915	20,500	-	‡3,986	1,454,950	2,886,000
October 1915	2,540	1,530	1,801	55,830	110,700
November	2,620	1,320	1,578	47,180	93,580
December	1,530	1,070	1,357	42,060	83,420
Calendar year 1915	20,500	-	3,848	1,404,640	2,786,000
January 1916	-	-	*1,380	42,780	84,850
February	-	-	*1,300	37,700	74,780
March	4,700	1,420	2,640	81,840	162,300
April	12,400	2,390	4,744	142,310	282,300
May	21,900	7,730	13,710	424,920	842,800
June	25,800	17,000	21,140	634,300	1,258,000
July	16,600	5,250	9,517	295,040	585,200
August	8,630	2,700	5,575	172,840	342,800
September	3,980	2,180	2,824	84,710	168,000
Water year 1916	25,800	-	‡5,633	2,061,510	4,089,000
October 1916	8,790	2,460	3,809	118,070	234,200
November	2,860	1,530	2,245	67,360	133,600
December	2,250	1,270	1,748	54,200	107,500
Calendar year 1916	25,800	-	5,891	2,156,070	4,276,000
January 1917	-	-	*1,300	40,300	79,930
February	-	-	*1,350	37,800	74,980
March	4,500	1,420	1,769	54,840	108,800
April	11,500	1,880	4,980	149,400	296,300
May	27,900	5,480	13,790	427,420	847,800
June	50,000	15,800	35,740	1,072,300	2,127,000
July	36,400	8,640	17,760	550,520	1,092,000
August	8,480	2,620	4,177	129,480	256,800
September	3,210	2,120	2,540	76,200	151,100
Water year 1917	50,000	-	‡7,611	2,777,890	‡5,510,000
October 1917	2,540	2,000	2,217	68,740	136,300
November	2,250	1,880	2,056	61,690	122,400
December	1,940	1,420	1,647	51,070	101,300
Calendar year 1917	50,000	-	7,451	2,719,760	5,395,000
January 1918	-	-	*1,450	44,950	89,160
February	-	-	*1,550	43,400	86,080
March	5,030	1,530	2,527	78,350	155,400
April	5,360	2,460	3,648	109,430	217,100
May	22,100	4,180	14,780	458,200	908,800
June	48,000	16,400	31,420	942,500	1,869,000
July	15,800	3,680	8,665	268,610	532,800
August	3,780	1,480	2,437	75,540	149,800
September	3,680	1,530	2,466	73,970	146,700
Water year 1918	48,000	-	6,237	2,276,460	4,515,000

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1918	2,390	2,120	2,211	68,540	135,900
November	2,460	1,530	2,063	61,900	122,800
December	-	-	*1,550	48,050	95,310
Calendar year 1918	48,000	-	6,229	2,273,440	4,509,000
January 1919	-	-	*1,400	43,400	86,080
February	-	-	*1,350	37,800	74,980
March	3,580	1,420	2,077	64,400	127,700
April	10,400	2,120	4,800	144,010	285,600
May	21,400	7,300	13,400	415,260	823,700
June	16,600	6,340	9,683	290,480	576,200
July	6,600	1,840	3,673	113,860	225,800
August	4,810	910	2,017	62,530	124,000
September	2,620	910	1,530	45,910	91,060
Water year 1919	21,400	-	3,825	1,396,140	2,769,000
October 1919	1,580	1,190	1,384	42,900	85,090
November	1,880	1,480	1,650	49,500	98,180
December	-	-	*1,500	46,500	92,230
Calendar year 1919	21,400	-	3,717	1,356,550	2,691,000
January 1920	-	-	*1,350	41,850	83,010
February	-	-	*1,280	37,120	73,630
March	2,250	1,230	1,604	49,730	98,640
April	4,600	b1,480	2,381	71,430	141,700
May	40,200	b3,390	21,600	669,640	1,328,000
June	41,600	b19,700	28,200	845,900	1,678,000
July	19,200	b5,960	10,710	332,020	658,600
August	6,880	b2,700	4,041	125,260	248,400
September	3,120	b2,000	2,268	68,050	135,000
Water year 1920	41,600	-	†6,502	2,379,900	4,720,000
October 1920	2,320	1,940	2,070	64,170	127,300
November	4,180	1,760	2,207	66,220	131,300
December	-	-	*1,380	42,780	84,850
Calendar year 1920	41,600	-	6,596	2,414,170	4,788,000
January 1921	-	-	*1,290	39,990	79,320
February	2,460	1,320	1,704	47,710	94,630
March	2,940	1,820	2,412	74,760	148,300
April	4,600	1,820	3,026	90,770	180,000
May	34,000	3,980	17,570	544,630	1,080,000
June	50,800	18,600	32,770	983,100	1,950,000
July	18,000	4,920	10,170	315,180	625,200
August	8,030	3,120	4,717	146,220	290,000
September	7,160	1,760	3,046	91,390	181,300
Water year 1921	50,800	-	6,868	2,506,920	4,972,000
October 1921	2,180	1,880	2,010	62,300	123,600
November	2,320	1,680	1,959	58,770	116,600
December	2,700	1,420	1,900	58,910	116,800
Calendar year 1921	50,800	-	6,887	2,513,730	4,986,000
January 1922	-	-	*1,300	40,300	79,930
February	-	-	*1,320	36,960	73,310
March	3,120	1,530	2,143	66,440	131,800
April	6,880	1,880	3,068	92,040	182,600
May	31,000	7,980	16,390	508,220	1,008,000
June	27,400	11,500	20,390	611,700	1,213,000
July	11,000	2,460	5,368	166,410	330,100
August	4,080	1,980	2,654	82,280	163,200
September	2,780	1,150	1,773	53,190	105,500
Water year 1922	31,000	-	†5,034	1,837,520	3,644,000
October 1922	1,640	1,320	1,509	46,780	92,790
November	2,120	1,480	1,781	53,440	106,000
December	1,940	1,370	1,634	50,640	100,400
Calendar year 1922	31,000	-	4,955	1,808,400	3,587,000
January 1923	1,880	1,280	1,570	48,680	96,560
February	1,820	1,190	1,508	42,220	83,740
March	2,000	1,320	1,710	53,020	105,200
April	5,030	1,760	3,015	90,460	179,400
May	27,400	5,360	14,900	461,890	916,100
June	30,400	18,600	24,800	744,100	1,476,000
July	17,800	5,030	11,830	366,650	727,200
August	7,880	2,860	5,020	155,620	308,700
September	3,480	2,120	2,736	82,090	162,800
Water year 1923	30,400	1,190	†6,015	2,195,590	4,355,000

b Revised.

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	3,480	2,540	2,917	90,430	179,400
November	2,700	1,700	2,260	67,800	134,500
December	2,180	-	1,801	†55,820	110,700
Calendar year 1923	30,400	-	6,188	2,258,780	4,480,000
January 1924	-	-	*1,770	54,870	108,800
February	-	1,540	1,664	†48,270	95,740
March	1,920	1,590	1,707	52,910	104,900
April	7,300	1,540	3,788	113,640	225,400
May	19,700	3,000	13,470	417,450	828,000
June	34,600	12,600	21,220	636,500	1,262,000
July	11,900	1,980	5,638	174,765	346,600
August	1,980	750	1,230	38,125	75,620
September	1,640	630	1,189	35,670	70,750
Water year 1924	34,600	-	4,860	1,786,250	3,542,000
October 1924	2,430	1,290	1,951	60,470	119,900
November	2,160	1,340	1,869	56,060	111,200
December	1,700	-	1,502	†46,550	92,330
Calendar year 1924	34,600	-	4,741	1,735,280	3,441,000
January 1925	-	-	*1,500	46,500	92,230
February	-	-	*1,500	42,000	83,310
March	-	-	2,367	c73,370	145,500
April	7,300	(a)	4,879	†146,370	290,300
May	18,600	4,600	11,030	342,000	678,300
June	18,200	9,740	12,830	384,940	763,500
July	11,400	2,570	5,756	178,450	354,000
August	4,390	1,390	2,581	80,000	158,700
September	4,500	2,040	2,951	88,530	175,600
Water year 1925	18,600	-	4,234	1,545,240	3,065,000
October 1925	3,980	1,810	2,577	79,900	158,500
November	3,000	1,440	2,100	62,990	124,900
December	1,860	1,240	1,576	48,870	96,930
Calendar year 1925	18,600	-	4,312	1,573,920	3,122,000
January 1926	1,760	1,060	1,418	43,960	87,190
February	1,540	1,340	1,410	39,470	78,290
March	2,100	1,340	1,713	53,090	105,300
April	11,200	1,540	5,070	152,110	301,700
May	27,100	6,470	15,450	478,880	949,800
June	33,400	12,900	22,540	676,200	1,341,000
July	16,600	3,780	9,076	281,370	558,100
August	4,920	1,070	2,453	76,030	150,800
September	1,640	950	1,190	35,710	70,830
Water year 1926	33,400	950	5,558	2,028,580	4,023,000
October 1926	2,000	1,110	1,511	46,840	92,910
November	2,000	1,150	1,607	48,220	95,640
December	-	-	1,372	†42,530	84,360
Calendar year 1926	33,400	-	5,409	1,974,410	3,916,000
January 1927	-	-	*1,250	38,750	76,860
February	-	-	1,401	†39,220	77,790
March	2,460	1,150	1,583	49,060	97,310
April	9,580	1,820	3,298	98,930	196,200
May	30,400	10,600	19,460	603,300	1,197,000
June	26,000	17,400	21,480	644,400	1,278,000
July	18,200	4,500	8,578	265,920	527,400
August	7,300	2,120	4,385	135,950	269,700
September	4,920	2,180	2,907	87,220	173,000
Water year 1927	30,400	-	5,754	2,100,340	4,166,000
October 1927	3,300	1,940	2,502	77,560	153,800
November	2,540	2,060	2,283	68,500	135,900
December	2,180	1,280	1,732	53,690	106,500
Calendar year 1927	30,400	-	5,925	2,162,500	4,289,000
January 1928	2,320	1,280	1,711	53,050	105,200
February	2,060	1,580	1,729	50,140	99,450
March	2,460	1,530	1,942	60,190	119,400
April	9,260	1,760	3,009	90,280	179,100
May	44,000	10,600	22,850	708,400	1,405,000
June	44,400	13,900	21,790	653,700	1,297,000
July	19,500	4,810	10,260	318,190	631,100
August	4,600	1,640	2,582	80,040	158,800
September	2,220	1,440	1,727	51,820	102,800
Water year 1928	44,400	1,280	6,190	2,265,560	4,494,000

a Previously published figure discarded.
c Discharge estimated for successive short periods.

Monthly summary of discharge of Colorado River near Palisade, Colo., 1901-33--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	5,250	1,540	1,982	61,440	121,900
November	2,640	1,810	2,103	63,080	125,100
December	2,040	1,200	1,458	45,200	89,650
Calendar year 1928	44,400	1,200	6,108	2,235,530	4,434,000
January 1929	1,500	1,420	1,459	45,220	89,690
February	1,440	1,380	1,409	39,440	78,230
March	3,210	1,370	2,238	69,390	137,600
April	8,180	2,120	4,196	125,880	249,700
May	35,800	5,140	18,410	570,810	1,132,000
June	38,200	19,700	27,910	837,200	1,661,000
July	18,800	6,740	9,975	309,230	613,300
August	9,900	2,500	5,102	158,160	313,700
September	8,790	2,710	5,422	162,650	322,600
Water year 1929	38,200	1,200	6,816	2,487,700	4,934,000
October 1929	4,180	2,220	3,193	98,970	196,300
November	2,860	1,920	2,363	70,880	140,600
December	2,220	-	1,929	†59,810	118,600
Calendar year 1929	38,200	-	6,980	2,547,640	5,053,000
January 1930	-	-	1,701	c52,740	104,600
February	-	1,440	1,718	†48,090	95,390
March	2,250	1,230	1,727	53,550	106,200
April	11,400	1,880	6,802	204,070	404,800
May	26,300	4,180	10,030	311,030	616,900
June	26,800	8,030	16,940	508,130	1,008,000
July	6,740	3,080	4,673	144,870	287,300
August	9,100	2,120	4,522	140,180	278,000
September	2,320	1,370	1,824	54,710	108,500
Water year 1930	26,800	-	4,786	1,747,030	3,465,000
October 1930	2,320	1,640	1,934	59,960	118,900
November	2,040	1,240	1,606	48,170	95,540
December	-	-	*1,250	38,750	76,860
Calendar year 1930	26,800	-	4,560	1,664,250	3,301,000
January 1931	-	-	*1,100	34,100	67,640
February	-	-	*1,080	30,240	59,980
March	1,340	965	1,159	35,925	71,260
April	2,180	710	1,571	47,135	93,490
May	11,000	2,180	5,583	173,080	343,300
June	15,200	4,810	9,193	275,800	547,000
July	6,210	470	1,889	58,570	116,200
August	790	239	474	14,688	29,130
September	2,160	178	755	22,657	44,940
Water year 1931	15,200	178	2,299	839,075	1,664,000
October 1931	1,770	706	1,097	34,014	67,470
November	1,320	850	1,127	33,822	67,080
December	-	-	*1,000	31,000	61,490
Calendar year 1931	15,200	178	2,167	791,031	1,569,000
January 1932	-	-	*950	29,450	58,410
February	-	-	*1,100	31,900	63,270
March	2,120	1,010	1,542	47,810	94,830
April	8,660	1,450	3,945	118,350	234,700
May	30,800	4,160	18,280	566,700	1,124,000
June	25,800	16,900	20,650	619,600	1,229,000
July	19,100	4,820	9,144	283,460	562,200
August	6,250	1,250	2,986	92,570	183,600
September	2,360	380	1,194	35,830	71,070
Water year 1932	30,800	380	5,258	1,924,506	3,817,000
October 1932	1,450	840	1,057	32,780	65,020
November	2,120	1,250	1,819	54,580	108,300
December	1,880	547	1,046	32,417	64,300
Calendar year 1932	30,800	380	5,315	1,945,447	3,859,000
January 1933	-	-	*1,080	33,480	66,410
February	-	-	*1,030	28,840	57,200
March	1,880	1,020	1,473	45,670	90,590
April	2,120	690	1,412	42,345	83,990
May	27,000	1,250	7,942	246,200	488,300
June	37,100	11,400	25,480	764,500	1,516,000
July	11,400	1,250	6,239	193,410	383,600
August	1,660	270	655	20,300	40,260
September	844	177	406	12,170	24,140
Water year 1933	37,100	177	4,128	1,506,692	2,988,000

c Discharge estimated for successive short periods.

Yearly discharge of Colorado River near Palisade, Colo., 1902-33

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1902	2,966	2,147,000	2,875	2,081,000
1903	4,239	3,069,000	4,343	3,144,000
1904	‡4,588	3,331,000	4,587	3,330,000
1905	‡4,930	3,569,000	4,909	3,554,000
1906	‡6,060	‡4,388,000	6,194	4,484,000
1907	‡6,370	4,612,000	6,344	4,593,000
1908	‡3,861	‡2,803,000	‡3,776	‡2,741,000
1909	6,876	4,978,000	‡6,984	‡5,056,000
1910	‡4,514	‡3,268,000	4,400	3,186,000
1911	‡4,876	‡3,530,000	‡5,040	3,648,000
1912	7,113	5,164,000	7,045	5,114,000
1913	‡4,268	3,090,000	4,200	3,041,000
1914	6,855	4,964,000	6,964	5,043,000
1915	‡3,986	2,886,000	3,848	2,786,000
1916	‡5,633	4,089,000	5,891	4,276,000
1917	‡7,611	‡5,510,000	7,451	5,395,000
1918	6,237	4,515,000	6,229	4,509,000
1919	3,825	2,769,000	3,717	2,691,000
1920	‡6,502	4,720,000	6,596	4,788,000
1921	6,868	4,972,000	6,887	4,986,000
1922	‡5,034	3,644,000	4,955	3,587,000
1923	‡6,015	4,355,000	6,188	4,480,000
1924	4,880	3,542,000	4,741	3,441,000
1925	4,234	3,065,000	4,312	3,122,000
1926	6,[illegible]	4,023,000	5,409	3,916,000
1927	5,754	4,166,000	5,925	4,289,000
1928	6,190	4,494,000	6,108	4,434,000
1929	6,816	4,934,000	6,980	5,053,000
1930	4,786	3,465,000	4,560	3,301,000
1931	2,299	1,664,000	2,167	1,569,000
1932	5,258	3,817,000	5,315	3,859,000
1933	4,128	2,988,000	-	-

COLORADO RIVER AT GRAND JUNCTION, COLO.

Location.- Lat. 39°03', long. 108°33', in sec. 23, T. 1 S., R. 1 W., Ute special base and meridian, at highway bridge at Grand Junction, 300 feet from pump house of city waterworks, and about a quarter of a mile upstream from mouth of Gunnison River.

Drainage area.- 8,910 square miles.

Records available.- October 1894 to September 1896 (gage heights), October 1896 to September 1899, and October 1899 to December 1900 (gage heights).

Average discharge.- 3 years (water years, 1897-99), 5,648 second-feet.

Extremes.- 1896-99: Maximum daily discharge, 42,800 second-feet June 21, 1899; maximum gage height on main channel, 12.0 feet June 21, 1899; minimum discharge observed, 561 second-feet Sept. 30 to Oct. 9, 1898 (gage height on main channel, 3.0 feet, other channel dry).

Gage.- River in two channels at highway bridge. Vertical staff on bridge pier near right bank of right channel installed Oct. 18, 1894; read to tenths twice daily when water reached the gage. Wire-weight gage on bridge over left or main channel installed at independent datum on Aug. 23, 1896; read to tenths twice daily except during winters when it was read only occasionally.

Remarks.- Records represent the combined discharge independently determined for each of the two channels, and are fair. Channel conditions unstable. While there was water in right channel continuously until August 1896, by 1900 that channel was dry except during high water. Gage heights somewhat affected by backwater from highest stages in Gunnison River. Winter discharge estimated. Diversions for irrigation above station.

Monthly summary of discharge of Colorado River at Grand Junction, Colo., 1896-99

(* Estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1896	1,890	1,430	1,534	47,560	94,330
November	1,430	910	1,279	38,380	76,130
December	-	-	*1,100	34,100	67,640
January 1897	-	-	*1,000	31,000	61,490
February	-	-	*1,150	32,200	63,870
March	-	-	*1,380	42,780	84,850
April	9,900	1,360	3,478	104,330	206,900
May	37,200	11,000	27,480	851,800	1,690,000
June	36,000	13,300	23,270	698,100	1,385,000
July	13,300	3,730	7,967	246,970	489,900
August	5,650	1,840	3,240	100,430	199,200
September	2,940	1,720	1,936	58,090	115,200
Water year 1897	37,200	-	6,262	2,285,740	4,535,000
October 1897	2,590	1,610	1,952	60,510	120,000
November	1,970	1,450	1,753	52,590	104,300
December	-	-	*1,600	49,600	98,380
Calendar year 1897	37,200	-	6,379	2,328,400	4,619,000
January 1898	-	-	*2,940	91,140	180,800
February	-	-	*2,980	83,440	165,500
March	-	-	*2,110	65,410	129,700
April	-	-	*4,300	129,000	255,900
May	12,600	4,630	7,130	221,030	438,400
June	17,300	8,280	13,700	411,060	815,300
July	7,610	1,720	4,445	137,780	273,300
August	1,720	949	1,127	34,946	69,320
September	1,140	561	907	27,209	53,970
Water year 1898	17,300	561	3,736	1,363,717	2,705,000
October 1898	1,140	561	915	28,352	56,240
November	1,340	755	1,072	32,156	63,780
December	-	-	*1,010	31,310	62,100
Calendar year 1898	17,300	561	3,542	1,292,835	2,564,000
January 1899	-	-	*1,000	31,000	61,490
February	-	-	*2,000	56,000	111,100
March	-	-	*1,800	55,800	110,700
April	10,500	1,650	3,940	118,200	234,400
May	30,500	5,010	19,380	600,640	1,191,000
June	42,800	19,400	31,310	939,200	1,863,000
July	27,900	6,860	14,070	436,160	865,100
August	9,360	2,300	4,577	141,900	281,500
September	2,860	1,920	‡2,166	64,990	128,900
Water year 1899	42,800	561	‡6,947	2,535,708	‡5,029,000

Note.- Monthly maximum and minimum April to September 1899 not previously published.

Yearly discharge of Colorado River at Grand Junction, Colo., 1897-99

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1897	6,262	4,535,000	6,379	4,619,000
1898	3,736	2,705,000	3,542	2,564,000
1899	‡6,947	‡5,029,000	-	-

GUNNISON RIVER NEAR GRAND JUNCTION AND AT WHITEWATER, COLO.

Location.- Lat. 39°02', long. 108°34', in NW¼ sec. 35, T. 1 S., R. 1 W., Ute special base and meridian, half a mile downstream from diversion dam for Redlands power canal, and 2 miles upstream from mouth of Gunnison River at Grand Junction, with supplemental station on power canal, since April 1917.

1894-99: Near mouth of river at Grand Junction; at railroad pump house a short distance from mouth 1894-95, and at highway bridge half a mile from mouth 1895-99.

1895-1906: At Whitewater, 13 miles upstream from mouth of river; at railroad station 1895-1901, and at highway bridge half a mile upstream 1902-6.

Drainage area.- 8,020 square miles near Grand Junction.

Records available.- October 1894 to December 1895 (gage heights), October 1896 to September 1899, and October 1916 to September 1938, near Grand Junction, and May to July, 1897 and 1901 (gage heights only), and October 1901 to October 1906, at Whitewater.

Miscellaneous discharge measurements in 1900 near Grand Junction.

Average discharge (river and canal).- 22 years (water years, 1917-38), 2,827 second-feet.

Extremes.- 1897-99, 1902-6, 1917-38: Maximum discharge, 35,700 second-feet (combined flow river and canal) May 23, 1920 (river gage height, 14.95 feet); minimum daily discharge, 106 second-feet (combined flow) July 20, 1934.

Gages on river near Grand Junction.- Water-stage recorder on left bank, half a mile downstream from diversion dam for Redlands power canal, and 2 miles upstream from mouth of river since June 25, 1934. Apr. 1, 1917, to June 25, 1934, staff gage at same site and datum, read twice daily to half-tenths.

Oct. 17, 1894, to July 3, 1895, staff gage on right bank at Denver and Rio Grande Railroad pump house a short distance from mouth of river, read daily to tenths or half-tenths. July 3, 1895, to Sept. 30, 1899, staff gage on right abutment of highway bridge half a mile from mouth of river, set to read same as gage at pump house on day and at stage when set, read daily to tenths during open-water seasons but not during 1896.

Gages on river at Whitewater.- Apr. 11, 1895, to July 6, 1901, staff gage on right bank at railroad station at Whitewater, 13 miles upstream from mouth of river, read daily to half-tenths during parts of 1895, 1897, and 1901. April 1902 to October 1906, wire or chain gage at highway bridge half a mile upstream from railroad station; zero of gage is 4,636.8 feet above mean sea level (unadjusted).

Gages on canal.- Water-stage recorder half a mile downstream from heading at same point as gage on river since Apr. 23, 1936. April 1917 to April 1936, staff gage near heading, read daily to half-tenths.

Cooperation.- Since 1934 records collected in collaboration with State engineer who furnished entire record of daily discharge for 1928-30 and all basic data for 1931-33 and who also assisted in collection of records for some earlier years. Redlands Irrigation and Power Company furnished staff gage readings on both river and canal from 1917 until installation of water-stage recorders in 1934 and 1936, and also furnished complete records of discharge of canal for 1917-22.

Remarks.- Records represent flow entering Colorado River from Gunnison River Basin, except about 25 second-feet that have been diverted from Redlands power canal below station during irrigation seasons 1917-38. Redlands power canal (constructed about 1907, with capacity of about 500 second-feet) diverts water from Gunnison River above river station and returns it to Colorado River below the mouth of Gunnison River. Since 1916 discharge of canal measured separately and included with discharge of Gunnison River as a combined record. Records of flow of river at Whitewater during period 1902-6 comparable to earlier records of flow of river near Grand Junction and to later combined records of flow of river and canal. Records for 1896-1906 are probably fair. Records for 1917-30 and 1934-38 are good except those for brief periods in winter and occasional periods in other seasons which are fair. Records for 1931-33 are fair. Winter records estimated or computed on basis of a few discharge measurements, gage heights, observer's notes, weather records, and, for later years, records at related stations. Stations in use during period 1896-99 were so close to mouth of river that gage heights were affected by backwater from high stages in Colorado River; original records later revised to allow for such effect. Measuring cable at present site of station was destroyed in 1931 and replaced in 1933; insufficient number of discharge measurements made during period cable was lacking. Diversions for irrigation above station. Minor transmountain diversions to Rio Grande Basin since 1914. Many small reservoirs and diversions for irrigation from one minor basin to another effect considerable regulation within Gunnison River Basin. Gunnison tunnel (capacity, 1,000 second-feet) has diverted water from upper Gunnison River Basin to Uncompahgre River Basin since 1910. Storage in Taylor Park Reservoir (capacity, 106,000 acre-feet) was begun in September 1937, when reservoir was completed.

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1896	-	-	*1,100	34,100	67,640
November	-	-	*1,050	31,500	62,480
December	-	-	*1,000	31,000	61,490
January 1897	-	-	*950	29,450	58,410
February	-	-	*900	25,200	49,980
March	-	-	*1,200	37,200	73,790
April	-	-	*6,000	180,000	357,000
May	20,700	10,000	16,700	517,630	1,027,000
June	19,100	5,370	11,160	334,820	664,100
July	5,370	1,510	3,231	100,170	198,700
August	1,850	325	1,030	31,930	63,330
September	1,510	325	712	21,360	42,370
Water year 1897	20,700	325	3,765	1,374,360	2,726,000

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1897	2,020	1,060	1,472	45,640	90,530
November	1,200	395	963	28,890	57,300
December	-	-	*850	26,350	52,260
Calendar year 1897	20,700	325	3,777	1,378,640	2,735,000
January 1898	-	-	*800	24,800	49,190
February	-	-	*750	21,000	41,650
March	-	-	*1,200	37,200	73,790
April	-	-	*2,500	75,000	148,800
May	9,000	3,960	5,317	164,840	327,000
June	11,400	4,160	8,850	265,510	526,600
July	3,960	1,080	2,543	78,830	156,400
August	968	578	699	21,344	42,340
September	578	399	479	14,367	28,500
Water year 1898	11,400	395	‡2,202	803,771	1,594,000
October 1898	672	399	533	16,525	32,780
November	672	314	497	14,900	29,550
December	-	-	*500	15,500	30,740
Calendar year 1898	11,400	314	2,054	749,816	1,487,000
January 1899	-	-	*500	15,500	30,740
February	-	-	*500	14,000	27,770
March	-	-	*800	24,800	49,190
April	8,790	968	3,550	106,490	211,200
May	15,700	3,900	9,670	299,770	594,600
June	14,700	7,740	10,800	324,000	642,600
July	7,410	2,250	4,170	129,270	256,400
August	4,560	908	1,921	59,550	118,100
September	1,000	758	875	26,252	52,070
Water year 1899	15,700	314	2,867	1,046,557	2,076,000
October 1901	-	-	*1,000	31,000	61,490
November	-	-	*1,000	30,000	59,500
December	-	-	*950	29,450	58,410
January 1902	-	-	*900	27,900	55,340
February	-	-	*900	25,200	49,980
March	-	-	*850	26,350	52,260
April	3,790	860	2,083	62,480	123,900
May	8,350	2,580	5,928	183,760	364,500
June	5,920	623	2,971	89,118	176,800
July	1,000	383	571	17,689	35,090
August	1,170	341	610	18,914	37,520
September	1,460	427	667	20,012	39,690
Water year 1902	8,350	341	‡1,539	561,873	1,114,000
October 1902	860	383	504	15,614	30,970
November	-	-	*500	15,000	29,750
December	-	-	*500	15,500	30,740
Calendar year 1902	8,350	341	1,418	517,537	1,027,000
January 1903	-	-	*500	15,500	30,740
February	-	-	*500	14,000	27,770
March	-	-	*500	15,500	30,740
April	5,790	670	2,263	67,900	134,700
May	14,000	5,040	‡8,166	253,150	502,100
June	17,800	8,770	12,530	376,000	745,800
July	8,770	3,860	5,132	159,100	315,600
August	4,470	740	1,313	40,710	80,750
September	2,130	740	1,284	38,515	76,390
Water year 1903	17,800	383	‡2,812	1,026,489	2,036,000
October 1903	1,130	740	890	27,590	54,720
November	1,210	635	844	25,325	50,230
December	‡970	670	810	25,110	49,800
Calendar year 1903	17,800	-	2,900	1,058,400	2,099,000
January 1904	1,000	570	724	22,436	44,500
February	1,050	600	774	22,459	44,550
March	920	510	648	20,098	39,860
April	4,600	570	2,248	67,429	133,700
May	8,630	2,920	5,623	174,310	345,700
June	6,880	2,570	4,602	138,050	273,800
July	3,220	630	1,319	40,890	81,100
August	2,640	‡1,100	1,642	50,910	101,000
September	3,140	695	1,104	33,110	65,670
Water year 1904	8,630	510	‡1,770	647,717	1,285,000

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1904	2,500	‡730	1,301	40,342	80,020
November	-	-	*770	23,100	45,820
December	-	-	*560	17,360	34,430
Calendar year 1904	8,630	510	1,777	650,494	1,290,000
January 1905	-	-	*670	20,770	41,200
February	-	-	*750	21,000	41,650
March	-	-	*1,200	37,200	73,790
April	7,940	840	2,494	74,823	148,400
May	22,700	6,030	12,720	394,340	782,200
June	28,100	6,760	16,810	504,290	1,000,000
July	6,130	1,520	2,783	86,270	171,100
August	3,780	720	1,429	44,300	87,870
September	1,470	720	962	28,865	57,250
Water year 1905	28,100	720	3,542	1,292,660	2,564,000
October 1905	1,520	870	1,103	34,178	67,790
November	-	-	*1,050	31,500	62,480
December	-	-	*1,000	31,000	61,490
Calendar year 1905	28,100	720	3,585	1,308,536	2,595,000
January 1906	-	-	*950	29,450	58,410
February	-	-	*900	25,200	49,980
March	-	-	*1,100	34,100	67,640
April	10,700	1,730	4,590	137,710	273,100
May	21,700	5,130	14,810	459,230	910,900
June	21,900	6,920	14,400	432,150	857,200
July	7,350	3,190	4,705	145,870	289,300
August	3,400	1,290	2,083	64,580	128,100
September	2,860	1,050	1,683	50,500	100,200
Water year 1906	21,900	-	‡4,042	1,475,468	2,927,000
October 1906	2,300	1,420	1,686	52,280	103,700
October 1916	-	-	*1,000	31,000	61,490
November	-	-	*950	28,500	56,530
December	-	-	*900	27,900	55,340
January 1917	-	-	*850	26,350	52,260
February	-	-	*900	25,200	49,980
March	-	-	*1,300	40,300	a79,930
April	8,280	1,180	3,480	104,400	207,100
May	21,400	3,420	10,290	318,900	632,500
June	24,800	9,080	18,310	549,360	1,090,000
July	15,000	3,300	6,609	204,890	406,400
August	3,690	698	1,766	54,732	108,600
September	1,220	505	838	25,147	49,880
Water year 1917	24,800	-	‡3,936	1,436,679	a2,850,000
October 1917	1,100	705	909	28,170	55,870
November	1,360	760	1,040	31,195	61,870
December	1,080	730	902	27,970	55,480
Calendar year 1917	24,800	-	3,936	1,436,614	2,850,000
January 1918	1,080	760	899	†27,865	55,270
February	1,230	760	1,045	†29,250	58,020
March	2,210	990	1,363	42,240	83,780
April	4,480	1,690	2,728	81,850	162,300
May	12,000	4,370	9,032	280,000	555,400
June	16,900	5,670	11,130	333,900	662,300
July	4,340	685	2,426	75,195	149,100
August	2,210	275	760	23,553	46,720
September	4,100	290	1,308	39,250	77,850
Water year 1918	16,900	275	2,796	1,020,438	2,024,000
October 1918	1,710	760	1,023	31,705	62,890
November	1,490	990	1,254	†37,630	74,640
December	1,710	910	1,113	b34,488	68,410
Calendar year 1918	16,900	275	2,841	1,036,926	2,057,000
January 1919	910	700	812	b25,180	49,940
February	950	800	880	b24,650	48,890
March	2,080	760	1,322	b40,980	81,280
April	9,560	1,460	4,310	129,300	256,500
May	11,200	5,230	8,220	254,820	505,400
June	8,310	3,190	4,910	147,300	292,200
July	3,350	840	2,050	63,550	126,000
August	3,850	326	1,110	34,410	68,250
September	1,200	411	716	21,480	42,600
Water year 1919	11,200	326	2,316	845,493	1,677,000

a Revised.
b Daily discharge estimated.

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1919	1,300	620	905	28,047	55,630
November	1,330	630	1,185	35,557	70,530
December	1,200	854	975	†30,225	59,950
Calendar year 1919	11,200	326	2,289	835,499	1,657,000
January 1920	1,030	776	919	b28,480	56,490
February	1,860	870	1,308	b37,940	75,250
March	1,660	870	1,082	†33,527	66,500
April	3,450	1,020	1,863	55,890	110,900
May	35,200	4,520	18,870	585,120	1,161,000
June	27,400	9,780	16,020	480,480	953,000
July	11,300	1,920	4,621	143,240	284,100
August	2,930	652	1,437	44,535	88,330
September	1,460	480	744	22,313	44,260
Water year 1920	35,200	480	4,168	1,525,354	3,026,000
October 1920	1,700	1,000	1,300	40,290	79,910
November	1,860	896	1,394	41,826	82,960
December	1,150	820	929	†28,808	57,140
Calendar year 1920	35,200	480	4,214	1,542,449	3,060,000
January 1921	-	-	*1,050	32,550	64,560
February	1,510	790	1,073	†30,040	59,580
March	2,110	1,030	1,461	45,300	89,850
April	4,720	1,300	2,148	64,450	127,800
May	18,800	3,240	10,300	319,440	633,600
June	29,800	7,740	17,330	519,920	1,031,000
July	7,270	2,610	4,662	144,510	286,600
August	6,740	1,200	2,514	77,940	154,600
September	3,350	870	1,527	45,796	90,840
Water year 1921	29,800	‡790	3,811	1,390,870	2,758,000
October 1921	1,510	820	1,068	33,119	65,690
November	1,560	965	1,286	38,575	76,510
December	1,460	953	1,219	37,803	74,980
Calendar year 1921	29,800	790	3,807	1,389,443	2,756,000
January 1922	1,460	610	994	30,801	61,090
February	1,300	642	923	25,840	51,250
March	1,940	830	1,208	37,440	74,260
April	12,000	1,090	2,982	89,450	177,400
May	22,200	7,000	14,910	462,260	916,900
June	15,400	4,760	10,240	307,060	609,000
July	5,470	690	1,864	57,775	114,600
August	2,980	559	928	28,779	57,080
September	559	448	493	14,795	29,350
Water year 1922	22,200	448	3,188	1,163,697	2,308,000
October 1922	1,110	452	743	23,018	45,660
November	1,150	962	1,038	31,143	61,770
December	1,280	-	997	†30,903	61,300
Calendar year 1922	22,200	448	3,121	1,139,264	2,260,000
January 1923	-	-	891	c27,634	54,810
February	-	-	808	c22,630	44,890
March	946	-	828	†25,661	50,900
April	4,400	979	2,162	64,849	128,600
May	18,100	3,310	11,580	359,100	712,300
June	14,800	8,040	11,340	340,110	674,600
July	7,550	2,330	4,666	144,640	286,900
August	4,120	2,110	2,941	91,170	180,800
September	2,820	1,020	1,767	53,020	105,200
Water year 1923	18,100	452	3,326	1,213,878	2,408,000
October 1923	2,440	1,570	1,860	57,650	114,300
November	1,910	1,090	1,502	45,070	89,400
December	-	-	1,063	c32,960	65,380
Calendar year 1923	18,100	-	3,464	1,264,494	2,508,000
January 1924	-	-	977	c30,300	60,100
February	-	-	993	c28,800	57,120
March	1,200	708	905	28,053	55,640
April	6,610	701	3,484	104,521	207,300
May	12,600	2,870	10,290	318,930	632,600
June	15,000	4,300	9,749	292,460	580,100
July	3,460	460	1,547	47,945	95,100
August	525	163	285	8,825	17,500
September	654	160	375	11,257	22,330
Water year 1924	15,000	160	2,751	1,006,771	1,997,000

b Daily discharge estimated.
c Discharge estimated for successive short periods.

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1924	1,530	533	1,227	38,041	75,450
November	1,440	1,250	1,349	40,460	80,250
December	1,260	-	982	†30,450	60,400
Calendar year 1924	15,000	160	2,678	980,042	1,944,000
January 1925	-	-	945	†29,310	58,140
February	-	-	1,030	†28,840	57,200
March	2,800	-	1,520	†47,108	93,440
April	8,660	2,020	4,178	126,350	248,600
May	7,690	4,410	6,126	189,900	376,700
June	8,180	3,180	5,211	156,320	310,100
July	4,210	1,330	2,414	74,840	148,400
August	2,860	718	1,554	48,159	95,520
September	3,850	1,400	2,020	60,610	120,200
Water year 1925	8,660	-	2,382	869,388	1,724,000
October 1925	-	-	*2,100	65,100	129,100
November	-	-	*1,350	40,500	80,330
December	-	-	*1,000	31,000	61,490
Calendar year 1925	8,660	-	2,458	897,037	1,779,000
January 1926	-	-	*800	24,800	49,190
February	1,180	870	1,013	†28,360	56,250
March	2,020	746	1,134	35,161	69,740
April	9,490	1,100	4,405	132,160	262,100
May	13,600	3,920	8,843	274,120	543,700
June	13,900	3,520	8,609	258,270	512,300
July	5,070	1,040	2,545	78,890	156,500
August	1,870	347	810	25,115	49,810
September	599	327	402	12,052	23,900
Water year 1926	13,900	-	2,755	1,005,528	1,994,000
October 1926	1,760	939	1,346	41,739	82,790
November	1,360	1,080	1,247	37,420	74,220
December	1,350	-	1,055	†32,700	64,860
Calendar year 1926	13,900	-	2,697	980,787	1,946,000
January 1927	1,140	-	961	†29,776	59,060
February	1,210	-	1,044	†29,238	57,990
March	3,280	946	1,239	38,418	76,200
April	10,800	1,470	3,734	112,020	222,200
May	17,700	7,240	11,860	367,800	729,500
June	14,300	6,870	9,196	275,890	547,200
July	10,300	1,760	3,829	118,710	235,500
August	2,520	1,300	1,815	56,280	111,600
September	5,430	1,010	2,896	86,870	172,300
Water year 1927	17,700	-	3,361	1,226,861	2,433,000
October 1927	3,260	1,480	2,125	65,860	130,600
November	1,920	1,370	1,657	49,700	98,580
December	1,690	1,020	1,322	40,970	81,260
Calendar year 1927	17,700	-	3,484	1,271,532	2,522,000
January 1928	1,550	1,140	1,334	41,360	82,040
February	1,360	1,050	1,179	34,200	67,830
March	4,000	1,050	1,692	52,440	104,000
April	10,000	1,190	3,065	91,960	182,400
May	21,400	9,650	14,170	439,270	871,300
June	20,300	6,600	9,364	280,910	557,200
July	6,700	1,680	3,118	96,650	191,700
August	2,670	422	1,020	31,617	62,710
September	1,140	538	722	21,661	42,960
Water year 1928	21,400	422	3,406	1,246,598	2,473,000
October 1928	2,000	755	1,263	39,160	77,670
November	1,680	1,290	1,416	42,480	84,260
December	1,360	580	947	29,362	58,240
Calendar year 1928	21,400	422	3,282	1,201,070	2,382,000
January 1929	935	660	738	22,870	45,360
February	1,280	640	837	23,435	46,480
March	2,540	1,030	1,785	55,350	109,800
April	8,020	1,760	3,410	102,290	202,900
May	23,100	4,090	14,460	448,370	889,300
June	18,800	7,150	12,910	387,420	768,400
July	9,210	2,520	4,445	137,810	273,300
August	7,460	1,400	3,543	109,840	217,900
September	8,370	2,340	4,959	148,760	295,100
Water year 1929	23,100	580	4,239	1,547,147	3,069,000

Note.- No yearly discharge previously published for 1929.

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1896-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1929	3,380	1,840	2,464	76,380	151,500
November	2,200	1,330	1,928	57,850	114,700
December	1,710	835	1,198	37,132	73,650
Calendar year 1929	23,100	640	4,404	1,607,507	3,188,000
January 1930	850	750	811	25,150	49,880
February	1,900	835	1,393	39,009	77,370
March	1,380	970	1,173	36,361	72,120
April	10,700	1,220	6,539	196,160	389,100
May	12,400	3,340	6,588	204,220	405,100
June	10,200	2,590	7,474	224,230	444,800
July	2,780	1,020	1,751	54,270	107,600
August	5,300	873	2,635	81,680	162,000
September	1,190	545	875	26,250	52,070
Water year 1930	12,400	545	2,901	1,058,692	2,100,000
October 1930	1,800	1,180	1,359	42,140	83,580
November	1,520	965	1,192	35,765	70,940
December	1,430	710	1,098	34,046	67,530
Calendar year 1930	12,400	545	2,738	999,281	1,982,000
January 1931	1,420	620	1,080	33,482	66,410
February	1,380	675	1,036	29,010	57,540
March	1,040	477	846	26,219	52,000
April	1,540	673	1,025	30,737	60,970
May	3,760	1,190	2,110	65,400	129,700
June	3,760	967	2,133	63,999	126,900
July	1,790	189	523	16,228	32,190
August	509	189	258	7,993	15,850
September	645	220	389	11,664	23,140
Water year 1931	3,760	189	1,087	396,683	786,800
October 1931	-	-	1,392	c43,160	85,610
November	-	-	1,294	c38,820	77,000
December	-	-	1,077	c33,380	66,210
Calendar year 1931	3,760	189	1,096	400,092	793,500
January 1932	-	-	765	c23,700	47,010
February	-	-	1,193	c34,600	68,630
March	-	-	1,239	c38,420	76,200
April	-	-	5,747	c172,400	342,000
May	18,100	3,560	11,440	354,760	703,700
June	10,500	5,990	8,129	243,860	483,700
July	5,940	1,230	3,138	97,270	192,900
August	3,490	478	1,209	37,493	74,370
September	1,490	463	707	21,208	42,070
Water year 1932	18,100	463	3,112	1,139,071	2,259,000
October 1932	1,430	595	919	28,500	56,530
November	1,270	877	1,127	33,817	67,080
December	1,350	649	858	26,591	52,740
Calendar year 1932	18,100	463	3,040	1,112,619	2,207,000
January 1933	-	-	619	c19,200	38,080
February	-	-	731	c20,470	40,600
March	-	-	1,054	c32,670	64,800
April	-	-	1,263	c37,900	75,170
May	16,000	1,420	5,847	181,260	359,500
June	17,800	2,350	9,308	279,230	553,800
July	3,360	222	1,335	41,391	82,100
August	976	244	532	16,483	32,690
September	1,740	233	739	22,169	43,970
Water year 1933	17,800	222	2,027	739,681	1,467,000
October 1933	-	-	901	c27,930	55,400
November	-	-	1,028	c30,850	61,190
December	-	-	934	c28,940	57,400
Calendar year 1933	17,800	222	2,023	738,493	1,465,000
January 1934	-	-	*750	23,250	46,120
February	-	-	*800	22,400	44,430
March	979	356	706	21,882	43,400
April	2,280	311	1,246	37,379	74,140
May	4,190	1,610	2,520	78,130	155,000
June	2,140	165	577	17,316	34,350
July	407	106	165	5,102	10,120
August	261	116	153	4,738	9,400
September	629	120	267	8,005	15,880
Water year 1934	4,190	106	838	305,922	606,800

c Discharge estimated for successive short periods.

Note.- No discharge for October 1930 to December 1933 or yearly discharge for 1930 previously published.

Monthly summary of discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1898-99, 1901-6, 1916-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1934	408	196	268	8,318	16,500
November	799	268	516	15,469	30,680
December	975	679	793	24,590	48,770
Calendar year 1934	4,190	106	730	266,579	528,800
January 1935	865	455	720	†22,311	44,250
February	808	431	689	19,282	38,250
March	845	648	732	22,689	45,000
April	2,160	288	993	29,783	59,070
May	8,480	1,270	4,317	133,840	265,500
June	15,800	4,550	9,797	293,910	583,000
July	4,520	921	2,403	74,481	147,700
August	1,200	608	903	28,008	55,550
September	1,850	397	883	26,488	52,540
Water year 1935	15,800	196	1,916	699,169	1,387,000
October 1935	1,550	843	1,035	32,080	63,630
November	1,160	909	1,024	30,707	60,910
December	996	613	812	d25,170	49,920
Calendar year 1935	15,800	288	2,024	738,749	1,465,000
January 1936	878	774	815	d25,267	50,120
February	903	536	780	d22,620	44,870
March	1,060	763	897	27,821	55,180
April	10,900	420	4,899	146,974	291,500
May	14,700	6,860	10,230	317,270	629,300
June	9,240	2,740	5,074	152,230	301,900
July	2,620	616	1,182	36,644	72,680
August	2,730	476	1,291	40,016	79,370
September	1,740	433	899	26,959	53,470
Water year 1936	14,700	420	2,415	883,758	1,753,000
October 1936	1,070	672	836	25,903	51,380
November	1,200	849	1,026	30,775	61,040
December	1,090	750	859	26,635	52,830
Calendar year 1936	14,700	420	2,402	879,114	1,744,000
January 1937	894	641	721	d22,347	44,320
February	912	692	792	d22,176	43,990
March	1,340	848	1,055	32,695	64,850
April	6,870	862	2,743	82,284	163,200
May	15,100	3,350	10,150	314,590	624,000
June	8,110	2,420	4,149	124,480	246,900
July	2,740	339	1,339	41,519	82,350
August	1,050	211	452	14,025	27,820
September	972	332	559	16,759	33,240
Water year 1937	15,100	211	2,066	754,188	1,496,000
October 1937	1,430	597	941	29,184	57,890
November	1,220	918	1,048	31,431	62,340
December	1,590	739	1,006	d31,185	61,850
Calendar year 1937	15,100	211	2,090	762,675	1,513,000
January 1938	1,020	765	883	d27,370	54,290
February	1,090	572	817	22,870	45,360
March	1,730	956	1,271	39,388	78,120
April	15,500	975	5,969	179,065	355,200
May	17,300	4,340	10,480	324,880	644,400
June	16,800	8,690	12,590	377,660	749,100
July	8,540	1,090	2,960	91,760	182,000
August	1,430	524	839	26,022	51,610
September	4,070	893	1,875	56,238	111,500
Water year 1938	17,300	524	3,389	1,237,053	2,454,000

d Daily discharge partly estimated.

Yearly discharge of Gunnison River near Grand Junction, and at Whitewater, Colo., 1897-99, 1902-6, 1917-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1897	3,765	2,726,000	3,777	2,735,000
1898	‡2,202	1,594,000	2,054	1,487,000
1899	2,867	2,076,000	-	-
1902	‡1,539	1,114,000	1,418	1,027,000
1903	‡2,812	2,036,000	2,900	2,099,000
1904	‡1,770	1,285,000	1,777	1,290,000
1905	3,542	2,564,000	3,585	2,595,000
1906	‡4,042	2,927,000	-	-
1917	‡3,936	‡2,850,000	3,936	2,850,000
1918	2,796	2,024,000	2,841	2,057,000
1919	2,316	1,677,000	2,289	1,657,000
1920	4,168	3,026,000	4,214	3,060,000
1921	3,811	2,758,000	3,807	2,756,000
1922	3,188	2,308,000	3,121	2,260,000
1923	3,326	2,408,000	3,464	2,508,000
1924	2,751	1,997,000	2,678	1,944,000
1925	2,382	1,724,000	2,458	1,779,000
1926	2,755	1,994,000	2,687	1,945,000
1927	3,361	2,433,000	3,484	2,522,000
1928	3,406	2,473,000	3,282	2,382,000
1929	4,239	3,069,000	4,404	3,188,000
1930	2,901	2,100,000	2,738	1,982,000
1931	1,087	786,800	1,096	793,500
1932	3,112	2,259,000	3,040	2,207,000
1933	2,027	1,467,000	2,023	1,465,000
1934	838	606,800	730	528,800
1935	1,916	1,387,000	2,024	1,465,000
1936	2,415	1,753,000	2,402	1,744,000
1937	2,066	1,496,000	2,090	1,513,000
1938	3,389	2,454,000	-	-

COLORADO RIVER NEAR FRUITA, COLO.

Location.- Lat. 39°08', long. 108°44', in sec. 20, T. 1 N., R. 2 W., Ute special base and meridian, at highway bridge about 1 mile upstream from Little Salt Wash, 1½ miles south of Fruita, and 12 miles downstream from Gunnison River.

Drainage area.- 17,100 square miles.

Records available.- October 1907 to September 1923.

Average discharge.- 16 years (water years, 1908-23), 8,721 second-feet.

Extremes.- 1908-23: Maximum discharge observed, 81,100 second-feet June 16, 1921 (gage height, 15.2 feet); minimum observed, 1,270 second-feet on several days in August 1919 (gage height, 1.9 feet).

Maximum discharge known, 125,000 second-feet on July 4, 1884; gage height, 18.5 feet from reports of U. S. Weather Bureau; discharge computed by combining flow in main channel from extension of 1921 rating and flow in overflow area from levels in 1917.

Gage.- Chain gage on highway bridge, installed May 3, 1911, at datum 0.05 foot higher than that of staff gage on bridge pier previously used. Gages read to tenths, daily during high-water seasons only 1908-10, and twice daily thereafter.

Cooperation.- Gage heights furnished by U. S. Weather Bureau. Discharge measurements in 1922 and 1923 furnished by State engineer.

Remarks.- Records good except those estimated, those prior to 1911, and those prior to 1918 above 40,000 second-feet, which are fair. No discharge measurements made prior to 1911, and gage not read except during high water seasons. Prior to 1918, discharge above 40,000 second-feet probably too small. Winter records and estimates for other periods computed from weather records and comparison with combined flow of Colorado River and Roaring Fork at Glenwood Springs, with consideration also of flow of Gunnison River. Diversions for irrigation above station.

Monthly summary of discharge of Colorado River near Fruita, Colo., 1907-23

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1907	-	-	*3,650	113,150	224,400
November	-	-	*2,800	84,000	166,600
December	-	-	*2,600	80,600	159,900
January 1908	-	-	*2,500	77,500	153,700
February	-	-	*2,600	75,400	149,600
March	-	-	*4,000	124,000	246,000
April	13,300	4,560	8,128	243,850	483,700
May	17,100	6,630	10,890	337,720	669,900
June	27,300	13,600	20,080	602,500	1,195,000
July	14,000	4,560	8,352	258,900	513,500
August	-	-	*2,800	86,800	172,200
September	-	-	*2,700	81,000	160,700
Water year 1908	27,300	-	5,916	2,165,420	4,295,000
October 1908	-	-	*3,000	93,000	184,500
November	-	-	*2,800	84,000	166,600
December	-	-	*2,600	80,600	159,900
Calendar year 1908	27,300	-	5,861	2,145,270	4,255,000
January 1909	-	-	*2,500	77,500	153,700
February	-	-	*2,150	60,200	119,400
March	-	-	*2,800	86,800	172,200
April	12,600	4,560	6,532	195,970	388,700
May	34,100	6,630	23,180	718,630	1,425,000
June	63,600	21,300	45,480	1,364,400	2,706,000
July	37,700	8,800	19,140	593,460	1,177,000
August	-	-	*7,000	217,000	430,400
September	-	-	*5,500	165,000	327,300
Water year 1909	63,600	-	10,240	3,736,560	7,411,000
October 1909	-	-	*3,600	111,600	221,400
November	-	-	*3,000	90,000	178,500
December	-	-	*2,750	85,250	169,100
Calendar year 1909	63,600	-	10,320	3,765,810	7,469,000
January 1910	-	-	*2,800	86,800	172,200
February	-	-	*2,700	75,600	150,000
March	-	-	*6,250	193,750	384,300
April	26,600	4,560	10,810	324,240	643,100
May	32,700	15,700	21,430	664,300	1,318,000
June	34,100	9,060	19,320	579,640	1,150,000
July	9,060	4,560	6,358	197,090	390,900
August	-	-	*3,000	93,000	184,500
September	-	-	*3,000	90,000	178,500
Water year 1910	34,100	-	7,099	2,591,270	5,140,000

Monthly summary of discharge of Colorado River near Fruita, Colo., 1907-23--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1910	-	-	*3,400	105,400	209,100
November	-	-	*2,900	87,000	172,600
December	-	-	*2,600	80,600	159,900
Calendar year 1910	34,100	-	7,061	2,577,420	5,113,000
January 1911	-	-	*2,600	80,600	159,900
February	-	-	*2,800	78,400	155,500
March	-	-	*5,000	155,000	307,400
April	-	-	*6,000	180,000	357,000
May	31,000	14,200	22,520	698,100	1,385,000
June	38,800	15,900	28,980	869,500	1,725,000
July	23,900	8,160	13,990	433,700	860,200
August	7,200	3,010	4,465	138,400	274,500
September	8,160	2,630	3,397	101,910	202,100
Water year 1911	38,800	-	‡8,243	3,008,610	5,968,000
October 1911	13,800	4,660	6,983	216,460	429,300
November	4,470	2,880	3,409	102,280	202,900
December	-	-	*2,700	83,700	166,000
Calendar year 1911	38,800	-	8,597	3,138,050	6,225,000
January 1912	-	-	*2,700	83,700	166,000
February	-	-	*2,600	75,400	149,600
March	6,740	2,630	3,350	103,850	206,000
April	8,410	3,770	5,662	169,860	336,900
May	53,600	8,160	28,440	881,660	1,749,000
June	58,100	25,100	42,790	1,283,800	2,546,000
July	39,800	15,900	21,620	670,300	1,330,000
August	16,400	3,610	7,509	232,780	461,700
September	4,660	3,010	3,997	119,900	237,800
Water year 1912	58,100	-	10,990	4,023,690	7,981,000
October 1912	4,850	3,770	4,339	134,510	266,800
November	4,290	2,750	3,628	108,850	215,900
December	-	-	*2,550	79,050	156,800
Calendar year 1912	58,100	-	10,780	3,943,660	7,822,000
January 1913	-	-	*2,550	79,050	156,800
February	-	-	*2,500	70,000	138,800
March	-	-	2,950	†91,450	181,400
April	16,600	5,050	10,420	312,500	619,800
May	27,300	13,500	19,200	595,200	1,181,000
June	26,000	11,900	17,790	533,800	1,059,000
July	10,500	4,470	6,931	214,870	426,200
August	4,110	2,100	2,664	82,570	163,800
September	4,950	2,320	3,668	110,040	218,300
Water year 1913	27,300	-	6,608	2,411,890	4,785,000
October 1913	4,660	3,150	3,888	120,530	239,100
November	3,860	2,690	3,197	95,900	190,200
December	3,010	-	2,460	†76,260	151,300
Calendar year 1913	27,300	-	6,526	2,382,170	4,726,000
January 1914	-	-	*2,500	77,500	153,700
February	-	-	2,550	†71,400	141,600
March	4,290	2,880	3,399	105,380	209,000
April	12,400	3,610	8,485	254,540	504,900
May	53,600	11,000	33,500	1,038,500	2,060,000
June	58,100	23,900	41,430	1,243,000	2,465,000
July	22,700	10,400	15,660	485,500	963,000
August	12,000	3,660	6,730	208,640	413,800
September	6,020	3,360	3,960	118,800	235,600
Water year 1914	58,100	-	10,670	3,895,950	7,727,000
October 1914	16,400	3,510	5,541	171,780	340,700
November	4,010	2,760	3,287	98,610	195,600
December	2,970	-	2,560	†79,360	157,400
Calendar year 1914	58,100	-	10,830	3,953,010	7,840,000
January 1915	-	-	*2,300	71,300	141,400
February	-	-	*2,400	67,200	133,300
March	3,610	-	2,690	†83,390	165,400
April	13,100	3,140	6,966	208,980	414,500
May	18,900	5,870	12,830	397,610	788,600
June	26,900	15,900	21,520	645,700	1,281,000
July	16,400	4,110	8,908	276,160	547,800
August	4,470	1,730	2,741	84,960	168,500
September	3,290	1,540	1,987	59,600	118,200
Water year 1915	26,900	-	6,150	2,244,650	4,452,000

Monthly summary of discharge of Colorado River near Fruita, Colo., 1907-23--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	3,290	2,300	2,708	83,940	166,500
November	3,140	2,170	2,687	80,620	159,900
December	-	-	‡2,540	†78,750	156,200
Calendar year 1915	26,900	-	5,858	2,138,210	4,241,000
January 1916	-	-	*2,650	82,150	162,900
February	-	-	2,849	†82,610	163,900
March	10,000	2,560	4,925	152,660	302,800
April	22,200	4,660	9,272	278,150	551,700
May	38,100	14,000	23,010	713,400	1,415,000
June	39,600	22,800	32,090	962,600	1,909,000
July	21,400	6,750	12,480	386,780	767,200
August	12,900	3,770	8,706	269,880	535,300
September	5,870	3,290	4,042	121,260	240,500
Water year 1916	39,600	-	8,997	3,292,800	6,531,000
October 1916	14,000	3,610	6,457	200,160	397,000
November	4,850	3,290	3,884	116,510	231,100
December	-	-	3,148	†97,580	193,500
Calendar year 1916	39,600	-	9,464	3,463,740	6,870,000
January 1917	-	-	*2,700	83,700	166,000
February	-	-	*2,600	72,800	144,400
March	5,050	-	2,822	†87,490	173,500
April	16,500	3,290	7,761	232,820	461,800
May	43,300	9,710	21,930	679,910	1,349,000
June	62,500	22,200	46,490	1,394,700	2,766,000
July	43,300	12,100	21,940	680,000	1,349,000
August	12,800	3,200	5,854	181,470	359,900
September	4,300	2,730	3,329	99,880	198,100
Water year 1917	62,500	-	10,760	3,927,020	7,789,000
October 1917	3,200	2,580	2,880	89,270	177,100
November	3,200	2,730	2,940	88,210	175,000
December	-	-	2,635	†81,680	162,000
Calendar year 1917	62,500	-	10,330	3,771,930	7,482,000
January 1918	-	-	2,393	a74,190	147,200
February	3,370	-	2,710	†75,890	150,500
March	7,140	2,580	4,065	126,010	249,900
April	9,100	4,510	6,420	192,600	382,000
May	32,100	8,510	21,760	674,610	1,338,000
June	56,200	19,700	37,380	1,121,500	2,224,000
July	18,700	4,100	10,330	320,260	635,200
August	4,720	1,690	3,134	97,140	192,700
September	6,880	1,800	3,758	112,750	223,600
Water year 1918	56,200	1,690	8,367	3,054,110	6,057,000
October 1918	3,910	2,880	3,331	103,250	204,800
November	3,720	2,880	3,327	†99,820	198,000
December	3,370	2,300	2,969	†92,030	182,500
Calendar year 1918	56,200	1,690	8,466	3,090,050	6,128,000
January 1919	-	-	*2,210	68,510	135,900
February	-	-	*2,200	61,600	122,200
March	6,020	1,980	3,623	112,300	222,700
April	17,600	3,540	8,731	261,940	519,600
May	32,200	12,800	20,990	650,600	1,290,000
June	27,200	8,680	13,990	419,610	832,300
July	8,380	2,550	5,412	167,780	332,800
August	7,262	1,270	3,103	96,190	190,800
September	3,910	1,350	2,257	67,720	134,300
Water year 1919	32,200	1,270	‡6,031	2,201,350	4,366,000
October 1919	3,020	1,850	2,305	71,440	141,700
November	3,100	(b)	2,793	†83,780	166,200
December	-	-	2,519	a78,090	154,900
Calendar year 1919	32,200	1,270	5,862	2,139,560	4,243,000
January 1920	-	-	2,611	a80,930	160,500
February	-	-	2,967	a86,050	170,700
March	4,300	2,250	2,946	91,340	181,200
April	7,000	2,860	4,198	125,950	249,800
May	77,100	8,090	41,530	1,287,390	2,554,000
June	71,100	28,800	46,580	1,397,500	2,772,000
July	28,800	8,090	14,810	459,200	910,800
August	9,940	3,540	5,528	171,360	339,900
September	3,910	2,580	3,091	92,740	183,900
Water year 1920	77,100	1,850	c11,000	4,025,770	7,986,000

a Daily discharge estimated.
b Previously published figure discarded.
c Revised.

Monthly summary of discharge of Colorado River near Fruita, Colo., 1907-23--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	4,720	3,040	3,591	111,310	220,800
November	4,290	3,040	3,645	109,360	216,900
December	-	-	2,726	†84,520	167,600
Calendar year 1920	77,100	-	11,200	4,097,650	8,128,000
January 1921	-	-	2,765	d85,730	170,000
February	3,720	2,580	2,833	†79,330	157,300
March	4,860	2,880	4,071	126,200	250,300
April	8,160	3,200	4,951	148,540	294,600
May	56,100	6,380	28,000	867,990	1,722,000
June	81,100	26,400	52,770	1,583,000	3,140,000
July	25,600	8,450	14,650	454,220	900,900
August	14,700	5,060	7,684	238,210	472,500
September	9,710	2,580	4,887	146,600	290,800
Water year 1921	81,100	-	11,050	4,035,010	8,004,000
October 1921	3,370	2,730	3,052	94,620	187,700
November	3,720	3,040	3,411	102,320	202,900
December	4,000	2,880	3,276	101,570	201,500
Calendar year 1921	81,100	-	11,040	4,028,330	7,990,000
January 1922	3,540	-	2,586	†80,160	159,000
February	-	-	2,389	d66,900	132,700
March	6,150	-	3,735	†115,770	229,600
April	16,600	3,720	6,547	196,400	389,600
May	53,100	16,200	32,010	992,200	1,968,000
June	43,200	15,700	30,600	918,100	1,821,000
July	14,700	3,370	6,997	216,900	430,200
August	5,270	2,300	3,744	116,070	230,200
September	3,720	1,860	2,498	74,950	148,700
Water year 1922	53,100	1,860	8,427	3,075,960	6,101,000
October 1922	2,600	1,930	2,128	65,980	130,900
November	2,960	2,600	2,803	84,100	166,800
December	3,240	2,280	2,660	†82,460	163,600
Calendar year 1922	53,100	1,860	8,247	3,009,990	5,970,000
January 1923	2,950	2,050	2,560	†79,360	157,400
February	2,660	2,180	2,390	†66,920	132,700
March	2,790	2,080	2,417	74,920	148,600
April	8,780	2,600	4,618	138,540	274,800
May	49,600	8,440	25,840	801,080	1,589,000
June	45,900	27,000	36,860	1,105,800	2,193,000
July	24,000	6,110	14,870	460,960	914,300
August	9,660	3,670	6,721	208,360	413,300
September	4,800	2,600	3,782	113,460	225,000
Water year 1923	49,600	1,930	8,992	3,281,940	6,509,000

d Discharge estimated for successive short periods.

Yearly discharge of Colorado River near Fruita, Colo., 1908-23

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1908	5,916	4,295,000	5,861	4,255,000
1909	10,240	7,411,000	10,320	7,469,000
1910	7,099	5,140,000	7,061	5,113,000
1911	‡8,243	5,968,000	8,597	6,225,000
1912	10,990	7,981,000	10,780	7,822,000
1913	6,608	4,785,000	6,526	4,726,000
1914	10,670	7,727,000	10,830	7,840,000
1915	6,150	4,452,000	5,858	4,241,000
1916	8,997	6,531,000	9,464	6,870,000
1917	10,760	7,789,000	10,330	7,482,000
1918	8,367	6,057,000	8,466	6,128,000
1919	‡6,031	4,366,000	5,862	4,243,000
1920	a11,000	7,986,000	11,200	8,128,000
1921	11,050	8,004,000	11,040	7,990,000
1922	8,427	6,101,000	8,247	5,970,000
1923	8,992	6,509,000	-	-

a Revised.

DOLORES RIVER AT GATEWAY, COLO.

Location.- Lat. 38°41', long. 108°58', in SW¼ sec. 15, T. 51 N., R. 19 W., 0.3 mile southwest of Gateway, 0.3 mile downstream from West Creek, and 8 miles upstream from Colorado-Utah State line.

Drainage area.- 4,350 square miles.

Records available.- March 1937 to September 1938.

Extremes.- 1937-38: Maximum discharge, 13,000 second-feet Apr. 25, 1938 (gage height, 11.65 feet); minimum daily discharge, 89 second-feet Jan. 25, 1938.

Gage.- Water-stage recorder 0.3 mile downstream from West Creek. Zero of gage is 4,547.44 feet above mean sea level.

Cooperation.- Records collected in collaboration with office of State engineer.

Remarks.- Records excellent for May to September 1937; good for March, April, October, and November 1937, and July to September 1938; and fair for December 1937 to June 1938. Diversions for irrigation above and below station. Diversion above station from Dolores River Basin to San Juan River Basin.

Monthly summary of discharge of Dolores River at Gateway, Colo., 1937-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
March 1937	561	238	370	11,459	22,730
April	9,550	344	4,416	132,479	262,800
May	6,440	2,150	4,505	139,640	277,000
June	2,440	623	1,211	36,341	72,080
July	2,010	158	553	17,128	33,970
August	1,020	136	308	9,545	18,930
September	627	93	204	6,112	12,120
October 1937	540	103	172	5,338	10,590
November	162	110	136	4,080	8,090
December	385	113	168	5,198	10,310
January 1938	354	89	165	5,124	10,160
February	502	120	203	5,679	11,260
March	2,290	338	647	20,067	39,800
April	11,400	408	4,914	147,428	292,400
May	7,510	1,670	3,509	108,790	215,800
June	4,710	2,060	3,242	97,250	192,900
July	2,840	300	786	24,356	48,310
August	578	114	240	7,452	14,780
September	2,290	192	577	17,309	34,330
Water year 1938	11,400	89	1,228	448,071	888,700

Yearly discharge of Dolores River at Gateway, Colo., 1938

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1938	1,228	888,700	-	-

COLORADO RIVER NEAR CISCO AND NEAR MOAB, UTAH

Location.- Lat. 38°49', long. 109°18', in NW¼ sec. 17, T. 23 S., R. 24 E., half a mile upstream from Dewey Bridge, 1 mile downstream from Dolores River, 11 miles south of Cisco, and 96 miles upstream from Green River, since Nov. 10, 1914. (See pl. 6, E.)
1913-14: In NW¼ sec. 26, T. 25 S., R. 21 E., at Moab Bridge, 2 miles northwest of Moab, and 31 miles downstream from station at Dewey Bridge.

Drainage area.- 24,100 square miles near Cisco.

Records available.- October 1913 to November 1914 near Moab, and November 1914 to September 1917 and October 1922 to September 1938 near Cisco. Also calendar year estimates 1895-1910 and monthly estimates January 1911 to September 1913 and October 1917 to September 1922.

Average discharge.- 20 years (water years, 1914-17, 1923-38), 8,528 second-feet (revised). 43 years (calendar years, 1895-1937), 8,930 second-feet.

Extremes.- 1913-17, 1922-38: Maximum discharge, 76,800 second-feet June 19, 1917 (gage height, 19.7 feet); minimum discharge observed, 558 second-feet July 21, 1934 (gage height, 0.44 foot).
1913-38: Maximum discharge occurred June 16, 1921; neither gage height nor discharge determined.
Maximum discharge known, about 125,000 second-feet July 4, 1884, from flood record at Fruita.

Gage.- Water-stage recorder on left bank half a mile upstream from Dewey Bridge, near Cisco, Nov. 10, 1914, to Sept. 30, 1917, and since Dec. 7, 1922; no change in datum. Temporary staff gage at same site and datum, Oct. 17 to Dec. 7, 1922.
Oct. 1, 1913, to Dec. 1, 1914, three gages at Moab Bridge, 31 miles downstream, all at same datum, 3,937.73 feet above mean sea level. Inclined staff on right bank just upstream from bridge used Oct. 1, 1913, to Mar. 6, 1914; chain gage on bridge used Mar. 7 to Apr. 6, and May 10 to Dec. 1, 1914; gage painted on bridge pier used Apr. 7 to May 9, 1914; read daily.

Remarks.- Records from station at Moab Bridge, October 1913 to November 1914, fair, and closely comparable to later records at station near Cisco. Records good 1915-32, and excellent 1933-38, except for periods estimated which are fair. Considerable ice-effect during most winters; records for such periods estimated or computed from discharge measurements, weather records, observer's notes, and hydrographic studies of relation to records at stations upstream and downstream on Colorado River and tributaries. During some years as indicated in discharge tables, record interrupted by silt and other interference with operation of water-stage recorder; discharge for such periods fair to good, and generally computed from hydrographic studies of discharge at related stations. More intensive operation of station since 1933. Diversions for irrigation above station.
In connection with preparation of Water-Supply Paper 556, "Water Power and Flood Control of Colorado River below Green River, Utah," study was made of available runoff records in Colorado River Basin above the mouth of Green River with the assumption that discharge at the Cisco station represented discharge of Colorado River at its junction with Green River, and estimates based thereon were published for 1895-1923. Those estimates, except for periods covered by actual records, are here presented without change except for revision of estimates for December 1912 to March 1913 based on later revision of records at the Fruita station from which they were originally derived in part.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38

(* Estimated; † Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1911	-	-	2,680	-	165,000
February	-	-	2,900	-	161,000
March	-	-	5,320	-	327,000
April	-	-	7,260	-	432,000
May	-	-	25,000	-	1,540,000
June	-	-	30,900	-	1,840,000
July	-	-	15,300	-	941,000
August	-	-	4,860	-	299,000
September	-	-	3,650	-	217,000
October 1911	-	-	7,630	-	469,000
November	-	-	3,700	-	220,000
December	-	-	2,980	-	183,000
Calendar year 1911	-	-	9,385	-	6,794,000
January 1912	-	-	2,800	-	172,000
February	-	-	2,710	-	156,000
March	-	-	3,660	-	225,000
April	-	-	6,500	-	387,000
May	-	-	32,500	-	2,000,000
June	-	-	45,500	-	2,710,000
July	-	-	22,800	-	1,400,000
August	-	-	7,920	-	487,000
September	-	-	4,220	-	251,000
Water year 1912	-	-	11,930	-	8,660,000

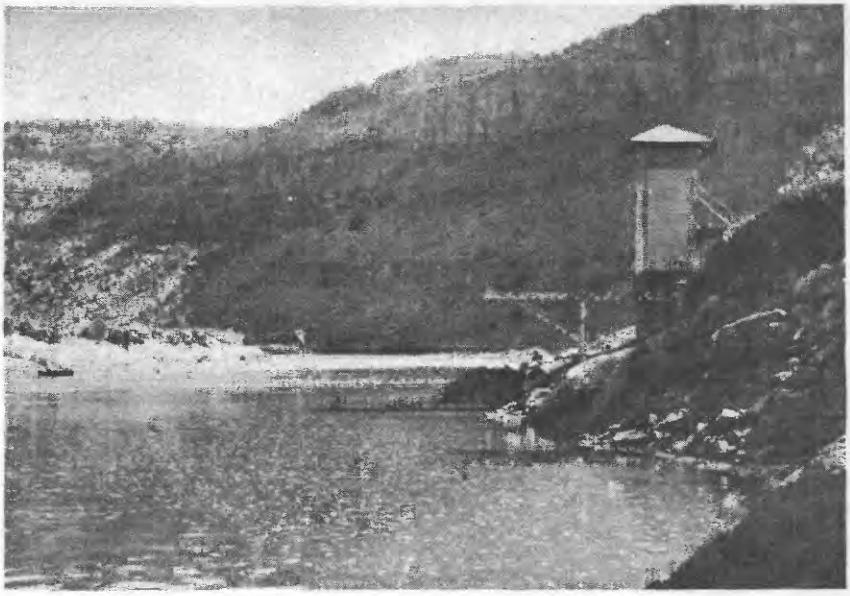
Note.- Monthly runoff in acre-feet estimated January 1911 to September 1913; monthly mean discharge computed therefrom.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38--Continued

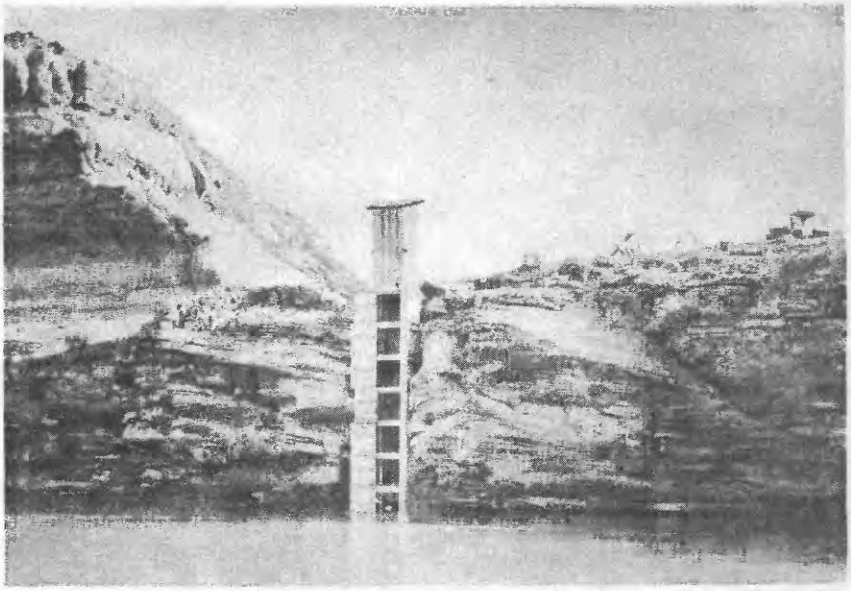
Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1912	-	-	4,550	-	280,000
November	-	-	3,850	-	229,000
December	-	-	2,780	-	a171,000
Calendar year 1912	-	-	11,660	-	a8,468,000
January 1913	-	-	2,910	-	a179,000
February	-	-	2,790	-	a155,000
March	-	-	3,380	-	a208,000
April	-	-	11,600	-	690,000
May	-	-	21,300	-	1,310,000
June	-	-	19,800	-	1,180,000
July	-	-	7,730	-	475,000
August	-	-	2,930	-	180,000
September	-	-	4,120	-	245,000
Water year 1913	-	-	7,324	-	5,302,000
October 1913	4,700	3,640	4,055	125,690	249,300
November	4,240	3,040	3,610	108,300	214,800
December	3,190	1,560	2,306	†71,490	141,800
Calendar year 1913	-	-	7,221	-	a5,228,000
January 1914	6,400	1,650	2,931	†90,870	180,200
February	8,350	1,950	2,727	76,350	151,400
March	5,300	2,050	3,645	112,980	224,100
April	14,100	4,400	9,815	294,440	584,000
May	58,800	10,500	33,820	1,048,500	2,080,000
June	65,600	28,600	47,190	1,415,700	2,808,000
July	29,200	12,000	18,360	569,100	1,129,000
August	13,800	4,660	8,115	251,580	499,000
September	6,940	3,660	4,459	133,780	265,300
Water year 1914	65,600	1,560	11,780	4,298,780	8,527,000
October 1914	13,800	3,660	6,076	188,360	373,600
November	4,660	2,800	3,525	105,760	209,800
December	2,880	-	2,350	†72,850	144,500
Calendar year 1914	65,600	-	11,950	4,360,270	8,649,000
January 1915	-	-	*2,120	65,720	130,400
February	-	-	2,535	b70,980	140,800
March	3,970	2,200	2,872	†89,040	176,600
April	17,700	3,840	9,711	291,330	577,800
May	25,600	8,560	18,170	563,360	1,117,000
June	33,600	19,900	26,020	780,600	1,548,000
July	19,400	5,260	10,010	310,460	615,800
August	4,820	1,670	2,995	92,850	184,200
September	4,640	1,520	2,172	65,150	129,200
Water year 1915	33,600	-	7,388	2,696,460	5,348,000
October 1915	3,340	2,380	2,790	86,480	171,500
November	3,550	2,290	2,770	83,110	164,800
December	2,940	-	2,527	†78,350	155,400
Calendar year 1915	33,600	-	7,061	2,577,430	5,112,000
January 1916	-	-	2,953	b91,540	181,600
February	-	-	3,237	†93,860	186,200
March	16,100	2,750	6,872	213,040	422,600
April	30,900	6,080	12,680	380,490	754,700
May	46,900	17,300	27,300	846,300	1,678,000
June	41,600	24,200	33,810	1,014,400	2,012,000
July	23,700	8,270	13,890	430,460	853,800
August	17,300	4,760	10,350	320,720	636,100
September	6,600	3,760	4,807	144,220	286,100
Water year 1916	46,900	-	10,340	3,782,970	7,504,000
October 1916	14,200	3,870	6,889	†213,560	423,600
November	-	-	3,460	†103,790	205,900
December	-	-	2,706	†83,880	166,400
Calendar year 1916	46,900	-	10,750	3,936,260	7,808,000
January 1917	-	-	*2,000	62,000	123,000
February	-	-	*2,500	70,000	138,800
March	5,580	-	3,145	†97,480	193,300
April	19,800	3,550	8,909	267,280	530,100
May	54,700	10,800	24,660	†764,600	1,517,000
June	73,200	-	55,530	†1,665,800	3,304,000
July	53,700	12,800	24,610	762,800	1,513,000
August	13,100	3,760	6,869	†212,950	422,400
September	5,340	3,040	3,887	116,620	231,300
Water year 1917	73,200	-	12,110	4,420,760	8,769,000

a Revised.
b Discharge estimated for successive short periods.

Note.- Monthly runoff in acre-feet estimated January 1911 to September 1913; monthly mean discharge computed therefrom.



A. COLORADO RIVER NEAR CAMEO, COLO.
Photograph by Robert Follansbee.



B. COLORADO RIVER NEAR CISCO, UTAH.
The clean-out doors facilitate removal of silt from well. Float of water-stage recorder shows through lower opening. Photograph by W. E. Dickinson.

GAGING STATIONS IN UPPER BASIN.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38.--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1917	-	-	3,060	-	188,000
November	-	-	3,130	-	186,000
December	-	-	3,330	-	205,000
Calendar year 1917	-	-	11,810	-	8,552,000
January 1918	-	-	3,010	-	185,000
February	-	-	3,150	-	175,000
March	-	-	4,390	-	270,000
April	-	-	7,230	-	430,000
May	-	-	25,200	-	1,550,000
June	-	-	43,500	-	2,590,000
July	-	-	11,800	-	727,000
August	-	-	3,350	-	206,000
September	-	-	4,080	-	243,000
Water year 1918	-	-	9,607	-	6,955,000
October 1918	-	-	3,580	-	220,000
November	-	-	3,610	-	215,000
December	-	-	2,760	-	170,000
Calendar year 1918	-	-	9,643	-	6,981,000
January 1919	-	-	2,240	-	138,000
February	-	-	2,200	-	122,000
March	-	-	3,580	-	220,000
April	-	-	9,380	-	558,000
May	-	-	22,900	-	1,410,000
June	-	-	15,800	-	940,000
July	-	-	6,050	-	372,000
August	-	-	3,330	-	205,000
September	-	-	2,270	-	135,000
Water year 1919	-	-	6,499	-	4,705,000
October 1919	-	-	2,370	-	146,000
November	-	-	2,890	-	172,000
December	-	-	2,600	-	160,000
Calendar year 1919	-	-	6,324	-	4,578,000
January 1920	-	-	2,680	-	165,000
February	-	-	3,130	-	180,000
March	-	-	3,120	-	192,000
April	-	-	4,570	-	272,000
May	-	-	46,000	-	2,830,000
June	-	-	51,900	-	3,090,000
July	-	-	17,200	-	1,060,000
August	-	-	6,080	-	374,000
September	-	-	3,330	-	198,000
Water year 1920	-	-	12,180	-	8,839,000
October 1920	-	-	3,900	-	240,000
November	-	-	3,870	-	230,000
December	-	-	2,890	-	178,000
Calendar year 1920	-	-	12,410	-	9,009,000
January 1921	-	-	2,930	-	180,000
February	-	-	2,880	-	160,000
March	-	-	4,420	-	272,000
April	-	-	5,460	-	325,000
May	-	-	32,500	-	2,000,000
June	-	-	61,500	-	3,660,000
July	-	-	16,900	-	1,040,000
August	-	-	8,700	-	535,000
September	-	-	5,390	-	321,000
Water year 1921	-	-	12,630	-	9,141,000
October 1921	-	-	3,220	-	198,000
November	-	-	3,610	-	215,000
December	-	-	3,480	-	214,000
Calendar year 1921	-	-	12,600	-	9,120,000
January 1922	-	-	2,670	-	164,000
February	-	-	2,410	-	134,000
March	-	-	3,980	-	245,000
April	-	-	7,290	-	434,000
May	-	-	37,100	-	2,280,000
June	-	-	35,600	-	2,120,000
July	-	-	7,890	-	485,000
August	-	-	4,020	-	247,000
September	-	-	2,540	-	151,000
Water year 1922	-	-	9,513	-	6,887,000

Note.- Monthly runoff in acre-feet estimated October 1917 to September 1922; monthly mean discharge computed therefrom.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1922	2,780	-	2,253	†69,850	138,500
November	3,590	2,870	3,163	94,900	188,200
December	3,770	2,400	3,067	95,090	188,600
Calendar year 1922	-	-	9,359	-	6,775,000
January 1923	4,000	2,400	2,988	92,640	183,700
February	3,070	2,200	2,776	77,730	154,200
March	3,220	2,460	2,791	86,521	171,600
April	12,200	3,330	7,253	217,600	431,600
May	47,100	11,900	28,460	882,300	1,750,000
June	44,200	29,500	37,070	1,112,000	2,206,000
July	27,100	7,680	16,900	523,950	1,039,000
August	13,300	4,850	8,524	264,230	524,100
September	7,040	3,770	5,003	150,090	297,700
Water year 1923	47,100	-	10,050	3,666,900	7,273,000
October 1923	5,590	4,130	4,875	151,140	299,800
November	7,020	3,260	4,086	122,580	243,100
December	3,590	2,300	2,988	†92,640	183,700
Calendar year 1923	47,100	2,200	10,340	3,773,420	7,484,000
January 1924	-	-	2,445	†75,790	150,300
February	-	-	3,284	†95,250	188,900
March	3,180	2,430	2,766	85,740	170,100
April	18,000	2,450	10,440	313,050	620,900
May	33,100	9,830	25,540	791,630	1,570,000
June	49,900	16,400	30,240	†907,200	1,799,000
July	15,200	2,870	7,647	237,070	470,200
August	2,850	958	1,827	†56,648	112,400
September	7,840	866	2,083	62,378	123,700
Water year 1924	49,900	866	8,172	2,991,116	5,932,000
October 1924	3,960	2,070	3,199	99,170	196,700
November	3,530	2,580	3,192	95,760	189,900
December	3,260	-	2,430	†75,330	149,400
Calendar year 1924	49,900	866	7,910	2,895,016	5,742,000
January 1925	-	-	#2,200	68,200	135,300
February	-	-	#2,600	72,800	144,400
March	6,090	2,560	3,563	†110,460	219,100
April	13,400	6,040	9,485	284,560	564,400
May	25,900	10,200	17,800	551,800	1,094,000
June	27,700	12,800	18,500	555,100	1,101,000
July	13,300	4,360	8,925	276,670	548,800
August	7,910	2,880	5,002	155,050	307,500
September	10,900	4,130	6,293	188,780	374,400
Water year 1925	27,700	-	6,942	2,533,680	5,025,000
October 1925	13,000	3,270	5,172	160,320	318,000
November	4,890	3,140	3,756	112,680	223,500
December	3,350	2,400	2,795	†86,630	171,800
Calendar year 1925	27,700	-	7,186	2,623,050	5,202,000
January 1926	(c)	-	2,313	b71,700	142,200
February	2,880	2,230	2,587	†72,440	143,700
March	5,060	2,340	3,452	†107,020	212,300
April	25,100	3,290	12,870	386,110	765,800
May	47,500	13,400	27,400	849,500	1,685,000
June	46,800	17,800	31,780	953,500	1,891,000
July	22,700	5,000	11,980	†371,500	736,900
August	5,500	1,670	3,423	†106,120	210,500
September	1,940	1,460	1,693	50,790	100,700
Water year 1926	47,500	1,460	9,119	3,328,310	6,601,000
October 1926	4,520	2,580	3,433	†106,410	211,100
November	3,500	2,650	3,125	d93,740	185,900
December	3,700	-	2,705	d83,840	166,300
Calendar year 1926	47,500	1,460	8,911	3,252,670	6,451,000
January 1927	-	-	2,657	d82,380	163,400
February	-	-	2,887	d80,840	160,300
March	5,750	2,610	3,395	†105,250	208,800
April	27,700	5,200	10,450	313,580	622,000
May	48,400	19,800	33,680	1,044,100	2,071,000
June	42,800	25,800	31,570	947,000	1,878,000
July	36,000	7,440	14,270	442,350	877,400
August	11,500	4,000	7,712	†239,080	474,200
September	21,900	3,920	8,887	†266,620	528,800
Water year 1927	48,400	-	10,430	3,805,190	7,547,000

b Discharge estimated for successive short periods.
c Previously published figure discarded.
d Discharge estimated for days or for short periods.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1927	8,070	4,590	5,828	180,660	358,300
November	7,500	3,940	4,623	138,700	275,100
December	4,170	3,500	3,765	†116,720	231,500
Calendar year 1927	48,400	-	10,840	3,957,280	7,849,000
January 1928	-	-	3,400	†105,410	209,100
February	4,150	3,080	3,331	96,610	191,600
March	9,690	3,240	4,581	†142,010	281,700
April	24,300	4,390	8,736	262,090	519,800
May	59,700	26,800	37,770	1,171,000	2,323,000
June	62,200	20,100	31,380	941,300	1,867,000
July	25,000	6,610	13,150	407,780	808,800
August	6,980	2,330	4,151	128,680	255,200
September	4,410	2,360	2,866	85,980	170,500
Water year 1928	62,200	2,330	10,320	3,776,940	7,492,000
October 1928	13,200	2,660	4,101	127,130	252,200
November	5,670	-	3,784	†113,530	225,200
December	-	-	2,361	†73,200	145,200
Calendar year 1928	62,200	-	9,986	3,654,720	7,249,000
January 1929	-	-	2,281	b70,700	140,200
February	-	-	2,314	b64,800	128,500
March	-	-	4,348	†134,790	267,400
April	21,700	5,700	11,360	340,950	676,300
May	58,600	12,300	34,320	1,063,900	2,110,000
June	52,900	27,800	40,120	1,203,500	2,387,000
July	25,800	9,200	14,350	444,850	882,300
August	18,600	4,280	10,120	313,760	622,300
September	18,300	4,960	11,330	339,930	674,200
Water year 1929	58,600	-	11,750	4,291,040	8,511,000
October 1929	8,130	4,860	6,558	203,300	403,200
November	5,300	3,730	4,607	138,200	274,100
December	4,350	-	3,324	†103,050	204,400
Calendar year 1929	58,600	-	12,110	4,421,730	8,770,000
January 1930	-	-	2,360	†73,160	145,100
February	-	-	3,719	†104,120	206,500
March	3,790	2,900	3,292	†102,050	202,400
April	25,400	3,100	15,450	463,470	919,300
May	37,200	8,320	16,780	520,120	1,032,000
June	40,200	11,200	26,030	781,000	1,549,000
July	10,600	5,500	7,075	219,320	435,000
August	13,800	3,370	8,534	264,540	524,700
September	5,370	2,520	3,383	101,490	201,300
Water year 1930	40,200	-	8,421	3,073,820	6,097,000
October 1930	6,330	2,990	3,796	117,690	233,400
November	3,570	2,490	2,902	87,050	172,700
December	2,700	1,640	2,325	†72,070	142,900
Calendar year 1930	40,200	-	7,962	2,906,080	5,764,000
January 1931	-	-	2,203	b68,300	135,500
February	-	2,310	2,749	†76,980	152,700
March	2,680	2,140	2,393	74,180	147,100
April	5,680	1,960	3,547	106,400	211,000
May	15,700	4,780	8,907	276,130	547,700
June	17,400	6,690	11,540	346,130	686,500
July	8,640	1,120	3,266	101,240	200,800
August	2,950	885	1,500	46,513	92,260
September	11,600	992	2,400	72,012	142,800
Water year 1931	17,400	885	3,958	1,444,695	2,865,000
October 1931	9,000	2,700	3,393	105,190	208,600
November	4,620	2,140	2,802	84,050	166,700
December	2,700	1,300	2,118	e65,650	130,200
Calendar year 1931	17,400	885	3,898	1,422,775	2,822,000
January 1932	2,500	1,550	1,903	e59,000	117,000
February	4,500	1,750	3,083	e89,420	177,400
March	4,400	2,290	3,159	97,930	194,200
April	19,900	3,400	12,280	368,530	731,000
May	49,600	14,400	33,530	1,039,500	2,062,000
June	33,700	23,200	28,350	850,400	1,687,000
July	23,600	4,950	12,490	387,040	767,700
August	11,900	2,220	4,766	147,750	293,100
September	4,840	1,740	2,563	76,890	152,500
Water year 1932	49,600	1,300	9,211	3,371,350	6,687,000

b Discharge estimated for successive short periods.
e Daily discharge estimated Dec. 11 to Feb. 21.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1932	3,270	2,330	2,719	84,300	167,200
November	3,270	2,710	3,012	90,350	179,200
December	3,000	-	2,158	f66,910	132,700
Calendar year 1932	49,600	-	9,175	3,358,020	6,661,000
January 1933	-	-	2,150	f66,650	132,200
February	2,870	2,100	2,274	f63,660	126,300
March	3,460	2,280	2,872	f89,040	176,600
April	4,240	2,110	3,023	90,700	179,900
May	37,300	3,650	13,170	408,300	809,900
June	49,200	14,400	33,670	1,010,200	2,004,000
July	13,400	2,140	6,830	211,740	420,000
August	3,740	1,380	2,398	74,340	147,500
September	4,340	1,190	2,616	78,470	155,600
Water year 1933	49,200	1,190	6,396	2,334,660	4,631,000
October 1933	4,250	2,120	2,610	80,900	160,500
November	2,810	2,230	2,554	76,620	152,000
December	2,990	1,900	2,500	77,490	153,700
Calendar year 1933	49,200	1,190	6,378	2,328,110	4,618,000
January 1934	2,810	2,040	2,279	70,660	140,200
February	2,610	1,960	2,258	62,230	125,400
March	2,560	1,950	2,215	68,670	136,200
April	7,100	1,840	3,815	114,450	227,000
May	16,800	6,520	10,930	338,920	672,200
June	11,600	1,650	4,390	131,690	261,200
July	1,590	640	1,067	g32,755	64,970
August	1,610	760	1,017	g31,515	62,510
September	2,040	704	1,078	32,354	64,170
Water year 1934	16,800	640	3,066	1,119,254	2,220,000
October 1934	1,670	1,170	1,353	41,930	83,170
November	2,190	1,190	1,730	51,910	103,000
December	2,940	1,610	2,073	64,250	127,400
Calendar year 1934	16,800	640	2,856	1,042,334	2,067,000
January 1935	2,590	1,540	2,059	63,840	126,600
February	2,230	1,720	2,015	56,430	111,900
March	2,370	1,770	2,095	64,960	128,800
April	6,930	2,500	4,461	133,830	265,400
May	25,400	4,580	11,950	370,360	734,600
June	53,200	19,300	33,060	991,700	1,967,000
July	18,500	4,470	10,450	323,960	642,600
August	5,320	2,280	3,508	108,760	215,700
September	4,680	1,720	2,938	88,140	174,800
Water year 1935	53,200	1,170	6,466	2,360,070	4,681,000
October 1935	4,470	2,590	3,055	94,720	187,900
November	3,300	2,760	3,060	91,800	182,100
December	2,850	1,770	2,326	72,120	143,000
Calendar year 1935	53,200	1,540	6,741	2,460,620	4,880,000
January 1936	2,800	2,000	2,314	h71,720	142,300
February	3,050	2,350	2,673	h77,510	153,700
March	3,210	2,340	2,710	84,020	166,700
April	27,500	2,090	13,180	395,290	784,000
May	38,300	18,100	30,560	947,300	1,879,000
June	35,700	12,900	21,120	633,500	1,257,000
July	12,200	3,580	6,557	203,260	403,200
August	7,950	2,350	4,867	150,890	299,300
September	4,680	1,700	2,818	84,530	167,700
Water year 1936	38,300	1,700	7,942	2,906,660	5,766,000
October 1936	3,300	2,150	2,547	78,970	156,600
November	3,300	2,340	2,900	86,990	172,500
December	a3,120	2,140	2,416	†74,890	148,500
Calendar year 1936	38,300	1,700	7,893	2,888,870	5,730,000
January 1937	2,340	-	a*1,900	a58,900	a116,800
February	-	-	a*2,400	a67,200	a133,300
March	3,680	2,400	3,193	98,970	196,300
April	18,900	2,500	9,738	292,130	579,400
May	39,200	12,000	25,970	†805,000	1,597,000
June	26,200	10,900	14,680	440,300	873,300
July	12,900	2,500	6,726	208,510	413,600
August	5,210	1,170	2,185	67,730	134,300
September	5,320	1,390	2,390	71,710	142,200
Water year 1937	39,200	-	a6,442	a2,351,300	a4,664,000

a Revised.
f Discharge estimated for days or for short periods Dec. 10 to Mar. 14.
g Daily discharge estimated July 25-27 and July 31 to Aug. 11.
h Daily discharge estimated Jan. 2 to Feb. 11.

Monthly summary of discharge of Colorado River near Cisco and near Moab, Utah, 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1937	5,000	2,140	2,994	92,810	184,100
November	4,170	2,590	3,039	91,170	180,800
December	4,370	1,800	2,754	85,370	169,300
Calendar year 1937	39,200	-	a6,520	a2,379,800	a4,720,000
January 1938	2,760	1,880	2,430	75,320	149,400
February	3,490	2,150	2,526	70,720	140,300
March	8,780	2,940	4,149	128,610	255,100
April	37,400	2,760	15,430	462,800	918,000
May	51,400	12,200	28,120	871,600	1,729,000
June	52,800	29,600	40,400	1,212,000	2,404,000
July	31,300	5,210	11,960	370,800	735,500
August	4,890	1,840	3,293	102,090	202,500
September	11,000	3,120	5,953	178,600	354,200
Water year 1938	52,800	1,800	10,260	3,741,890	7,422,000

a Revised.

Yearly discharge of Colorado River near Cisco and near Moab, Utah, 1895-1938

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1895	-	-	8,785	6,360,000
1896	-	-	9,353	6,790,000
1897	-	-	11,410	8,260,000
1898	-	-	6,699	4,850,000
1899	-	-	12,290	8,900,000
1900	-	-	9,503	6,880,000
1901	-	-	9,683	7,010,000
1902	-	-	5,912	4,280,000
1903	-	-	7,804	5,650,000
1904	-	-	6,934	5,070,000
1905	-	-	8,965	6,490,000
1906	-	-	10,620	7,690,000
1907	-	-	10,910	7,900,000
1908	-	-	6,419	4,660,000
1909	-	-	11,700	8,470,000
1910	-	-	8,053	5,830,000
1911	-	-	9,385	6,794,000
1912	11,930	8,660,000	11,660	a8,468,000
1913	7,324	5,302,000	7,221	a5,228,000
1914	11,780	8,527,000	11,950	8,649,000
1915	7,388	5,348,000	7,061	5,112,000
1916	10,340	7,504,000	10,750	7,808,000
1917	12,110	8,769,000	11,810	8,552,000
1918	9,607	6,955,000	9,643	6,981,000
1919	6,499	4,705,000	6,324	4,578,000
1920	12,180	8,839,000	12,410	9,009,000
1921	12,630	9,141,000	12,600	9,120,000
1922	9,513	6,887,000	9,359	6,775,000
1923	10,060	7,273,000	10,340	7,484,000
1924	8,172	5,932,000	7,910	5,742,000
1925	6,942	5,025,000	7,186	5,202,000
1926	9,119	6,601,000	8,911	6,451,000
1927	10,430	7,547,000	10,840	7,849,000
1928	10,320	7,492,000	9,986	7,249,000
1929	11,760	8,511,000	12,110	8,770,000
1930	8,421	6,097,000	7,962	5,764,000
1931	3,958	2,865,000	3,898	2,822,000
1932	9,211	6,687,000	9,175	6,661,000
1933	6,396	4,631,000	6,378	4,618,000
1934	3,066	2,220,000	2,856	2,067,000
1935	6,466	4,681,000	6,741	4,880,000
1936	7,942	5,766,000	7,893	5,730,000
1937	a6,442	a4,664,000	a6,520	a4,720,000
1938	10,250	7,422,000	-	-

a Revised.

Note.- Calendar year runoff estimated 1895-1910; yearly mean discharge computed therefrom.

GREEN RIVER AT GREEN RIVER, WYO.

Location.- Lat. 41°32', long. 109°29', in sec. 22, T. 18 N., R. 107 W., 100 feet downstream from railroad bridge at town of Green River, and 1 mile upstream from Bitter Creek.

Drainage area.- 7,670 square miles.

Records available.- June to September 1891, May 1895 to December 1899, October 1900 to December 1906, and October 1914 to September 1938.

Average discharge.- 34 years (water years, 1896-99, 1901-6, 1915-38), 1,864 second-feet.

Extremes.- 1895-1906, 1914-38: Maximum discharge observed, 22,200 second-feet June 19, 1918 (gage height, 12.3 feet); minimum observed, 160 second-feet Nov. 17, 1898 (gage height, 0.60 foot).

Gage.- Chain gage on left bank at Union Pacific Railroad pumping station 100 feet downstream from railroad bridge, since Sept. 28, 1920. Zero of gage is 6,071.07 feet above mean sea level (general adjustment of 1929). Gage read twice a day, usually to hundredths.

1891 and 1895-1906, vertical staff gage attached to heavy submerged cribbing at left bank near railroad pump house, 40 feet downstream from railroad bridge. It is not known whether datum of gage was the same in 1891 as in 1895-1906, nor were relations to datums of later gages determined. Gage read to half-tenths and occasionally to quarter-tenths at least once a day.

October 1914 to September 1920, chain gage on highway bridge at Green River, three-quarters of a mile downstream from railroad bridge. Relation of gage datum to that of later gage not determined. Gage read to tenths twice a day 1914-18, and once a day 1919-20.

Cooperation.- Gage-height records collected in cooperation with United States Weather Bureau, 1935-38, and furnished by that Bureau, 1914-20. Record of monthly mean discharge for 1891 furnished by the State engineer of Wyoming, who established the original gage.

Remarks.- Records good except for periods of ice effect each winter and occasional brief periods of backwater at gage from floating railroad ties in booms or other temporary obstructions; records for such periods fair. Records prior to 1914 derived from less base data than those for later years. Methods of measuring discharge in 1891 not known. Discharge measurements in 1896 made by means of floats. No measurements made in 1900 and 1903. Monthly discharge for winters prior to 1931 estimated from weather records and records of discharge at other stations in the basin upstream. Winter records since 1931 computed from two discharge measurements each winter and weather records, and also from comparison with flow at the Linwood station since 1936. Diversions for irrigation above station. Some natural but little if any controlled regulation in headwater lakes.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
June 10-30, 1891 a/	-	-	8,743	183,603	364,200
July	-	-	6,709	207,979	412,500
August	-	-	2,938	91,078	180,700
September 1-10	-	-	1,624	16,240	32,210
May 1895 b/	6,120	2,530	4,010	124,310	246,600
June	6,780	3,730	4,595	137,860	273,400
July	6,900	2,730	4,199	130,160	258,200
August	2,910	1,200	1,882	58,340	115,700
September	1,170	530	749	22,459	44,550
October 1895	718	c 410	517	16,042	31,820
November	(d)	(d)	*265	7,950	15,770
December	-	-	*260	8,060	15,990
January 1896	-	-	*250	7,750	15,370
February	-	-	*250	7,250	14,380
March	-	-	*300	9,300	18,450
April	1,480	(d)	*975	29,250	58,020
May	6,980	1,380	2,202	68,270	135,400
June	15,500	6,820	11,790	353,750	701,700
July	6,230	2,440	4,195	130,040	257,900
August	2,530	1,390	1,878	58,220	115,500
September	1,520	800	1,122	33,662	66,770
Water year 1896	15,500	-	‡1,993	729,544	1,447,000
October 1896	(d)	(d)	*740	22,940	45,500
November	-	-	*600	18,000	35,700
December	-	-	*500	15,500	30,740
Calendar year 1896	15,500	-	2,060	753,932	1,495,000
January 1897	-	-	*450	13,950	27,670
February	-	-	*400	11,200	22,210
March	-	-	*400	12,400	24,600
April	3,200	1,200	1,956	58,730	116,500
May	17,900	2,720	9,768	302,820	600,600
June	14,400	4,400	7,548	226,440	449,100
July	4,400	1,760	2,794	86,600	171,800
August	2,500	640	1,603	49,700	98,580
September	640	400	‡462	13,860	27,490
Water year 1897	17,900	-	‡2,280	832,140	1,650,000

a Record for 1891 previously published only in form of monthly mean discharge.
b Discharge estimated May 1, record for full month not previously published.
c Revised.
d Previously published figure discarded.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1897	(d)	500	*1,010	31,310	62,100
November	-	-	*760	22,800	45,220
December	-	-	*550	17,050	33,820
Calendar year 1897	17,900	-	2,320	846,860	1,680,000
January 1898	-	-	*500	15,500	30,740
February	-	-	*400	11,200	22,210
March	-	-	*450	13,950	27,670
April	5,520	800	2,664	79,910	158,500
May	7,680	2,320	4,063	125,960	249,800
June	15,100	4,200	9,064	271,920	539,300
July	9,120	2,160	4,620	143,220	284,100
August	2,080	720	1,417	43,920	87,110
September	1,200	240	646	19,390	38,460
Water year 1898	15,100	-	2,181	796,130	1,579,000
October 1898	400	300	347	10,750	21,320
November	1,280	160	*400	12,000	23,800
December	-	-	*300	9,300	18,450
Calendar year 1898	15,100	-	2,074	757,020	1,501,000
January 1899	-	-	*300	9,300	18,450
February	-	-	*400	11,200	22,210
March	-	-	*450	13,950	27,670
April	2,390	990	1,596	47,880	94,970
May	5,690	1,530	3,270	101,360	201,000
June	21,400	5,480	12,450	373,590	741,000
July	20,700	8,880	14,540	450,620	893,800
August	8,650	2,460	5,169	160,250	317,900
September	2,460	1,700	2,063	61,880	122,700
Water year 1899	21,400	160	‡3,458	1,262,080	2,503,000
October 1899	-	-	*1,500	46,500	92,230
November	-	-	*1,000	30,000	59,500
December	-	-	*500	15,500	30,740
Calendar year 1899	21,400	-	3,622	1,322,030	2,622,000
October 1900	-	-	*600	18,600	36,890
November	-	-	*600	18,000	35,700
December	-	-	*500	15,500	30,740
January 1901	-	-	*500	15,500	30,740
February	-	-	*400	11,200	22,210
March	-	-	*500	15,500	30,740
April	‡2,770	500	1,325	39,760	78,860
May	12,400	1,780	6,753	209,330	415,200
June	10,200	3,400	5,416	162,470	322,300
July	‡4,030	1,840	2,751	85,270	169,100
August	‡2,280	905	1,411	43,755	86,790
September	905	500	632	18,967	37,620
Water year 1901	12,400	-	‡1,791	653,852	1,297,000
October 1901	-	-	*500	15,500	30,740
November	-	-	*450	13,500	26,780
December	-	-	*400	12,400	24,600
Calendar year 1901	12,400	-	1,762	643,152	1,276,000
January 1902	-	-	*300	9,300	18,450
February	-	-	*300	8,400	16,660
March	-	-	*300	9,300	18,450
April	1,380	285	844	25,330	50,240
May	7,920	845	2,262	70,124	139,100
June	10,800	4,380	7,104	213,120	422,700
July	4,550	1,720	2,673	82,850	164,300
August	2,260	950	1,387	42,995	85,280
September	950	380	656	19,665	39,000
Water year 1902	10,800	-	1,431	522,484	1,036,000
October 1902	380	285	329	10,205	20,240
November	-	-	*300	9,000	17,850
December	-	-	*300	9,300	18,450
Calendar year 1902	10,800	-	1,396	509,589	1,011,000
January 1903	-	-	*300	9,300	18,450
February	-	-	*250	7,000	13,880
March	-	-	*600	18,600	36,890
April	1,740	582	1,200	36,000	71,400
May	2,660	1,300	1,840	57,040	113,100
June	13,000	2,020	9,570	287,100	569,500
July	8,010	2,400	3,990	123,690	245,300
August	2,160	1,110	1,460	45,260	89,770
September	3,320	792	1,550	46,500	92,230
Water year 1903	13,000	-	1,805	658,995	1,307,000

d Previously published figure discarded.

Note.- Records October to December 1899 and calendar year 1899 revised.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1903	1,160	845	1,007	31,213	61,910
November	-	-	*800	24,000	47,600
December	-	-	*600	18,600	36,890
Calendar year 1903	13,000	-	1,930	704,303	1,397,000
January 1904	-	-	*500	15,500	30,740
February	-	-	*700	20,300	40,260
March	-	-	*900	27,900	55,340
April	3,660	1,160	1,958	58,740	116,500
May	13,100	2,690	6,131	190,060	377,000
June	12,200	7,160	‡10,180	305,280	605,500
July	8,010	3,470	5,255	162,890	323,100
August	3,540	1,220	2,040	63,230	125,400
September	1,400	620	890	26,715	52,990
Water year 1904	13,100	-	2,580	944,428	1,873,000
October 1904	838	597	698	21,650	42,940
November	-	-	*550	16,500	32,730
December	-	-	*500	15,500	30,740
Calendar year 1904	13,100	-	2,525	924,265	1,833,000
January 1905	-	-	*400	12,400	24,600
February	-	-	*400	11,200	22,210
March	-	-	*550	17,050	33,820
April	1,260	600	883	26,479	52,520
May	3,600	820	1,582	49,043	97,280
June	8,540	3,320	5,947	178,400	353,900
July	5,590	1,820	3,459	107,240	212,700
August	1,740	860	1,122	34,794	69,010
September	964	420	639	19,178	38,040
Water year 1905	8,540	-	‡1,396	509,434	1,010,000
October 1905	600	420	486	15,055	29,860
November	-	-	*400	12,000	23,800
December	-	-	*300	9,300	18,450
Calendar year 1905	8,540	-	1,348	492,139	976,200
January 1906	-	-	*300	9,300	18,450
February	-	-	*300	8,400	16,660
March	-	-	*500	15,500	30,740
April	3,360	893	2,043	61,283	121,600
May	8,700	2,060	5,026	155,800	309,000
June	12,200	4,510	6,827	204,810	406,200
July	6,210	2,740	4,862	150,710	298,900
August	4,060	1,390	2,239	69,400	137,700
September	1,990	790	1,257	37,709	74,790
Water year 1906	12,200	-	2,053	749,267	1,486,000
October 1906	790	560	660	20,449	40,560
November	-	-	*600	18,000	35,700
December	-	-	*500	15,500	30,740
Calendar year 1906	12,200	-	2,101	766,861	1,521,000
October 1914	-	-	*550	17,050	33,820
November	-	-	*500	15,000	29,750
December	-	-	*400	12,400	24,600
January 1915	-	-	*325	10,075	19,980
February	-	-	*325	9,100	18,050
March	-	-	*800	24,800	49,190
April	2,140	910	1,416	42,490	84,280
May	2,560	1,140	1,616	50,090	99,350
June	3,960	2,010	2,824	84,730	168,100
July	3,770	1,580	2,646	82,020	162,700
August	1,580	840	1,115	34,555	68,540
September	3,600	738	1,271	38,118	75,610
Water year 1915	3,960	-	1,152	420,428	834,000
October 1915	1,620	910	1,175	36,410	72,220
November	910	625	816	†24,478	48,550
December	910	345	624	†19,355	38,390
Calendar year 1915	3,960	-	1,250	456,221	905,000
January 1916	565	295	416	†12,882	25,550
February	798	422	569	†16,504	32,740
March	6,280	595	1,973	†61,164	121,300
April	4,390	1,670	2,643	79,290	157,300
May	5,780	2,670	3,879	120,240	238,500
June	13,800	2,530	8,332	249,960	495,800
July	9,040	2,820	5,460	169,270	335,700
August	3,290	1,290	2,154	66,760	132,400
September	1,290	660	898	26,940	53,430
Water year 1916	13,800	295	2,413	883,253	1,752,000

Note.- Records for November, December, and calendar year 1906 not previously published.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1916	990	692	874	27,089	53,730
November	950	250	518	†15,532	30,810
December	448	340	405	†12,559	24,910
Calendar year 1916	13,800	250	2,345	858,190	1,702,000
January 1917	448	315	374	†11,605	23,020
February	392	340	364	†10,203	20,240
March	1,030	420	529	†16,403	32,530
April	5,170	1,030	2,265	†67,950	134,800
May	8,400	1,890	4,758	147,510	292,600
June	18,400	4,560	10,070	302,150	599,300
July	17,300	5,170	10,370	321,420	637,500
August	5,170	1,470	2,398	†74,330	147,400
September	1,570	1,030	1,338	40,130	79,600
Water year 1917	18,400	250	2,868	1,046,881	2,076,000
October 1917	1,120	795	930	28,832	57,190
November	1,030	475	790	†23,702	47,010
December	-	-	*550	17,050	33,820
Calendar year 1917	18,400	315	2,908	1,061,285	2,105,000
January 1918	-	-	*375	11,625	23,060
February	-	-	*400	11,200	122,210
March	-	-	*890	27,590	54,720
April	2,890	1,320	1,801	†54,030	107,200
May	3,880	1,660	3,052	†94,600	187,600
June	21,800	3,020	13,430	402,990	799,300
July	7,770	2,260	4,279	132,640	263,100
August	2,260	1,000	1,573	†48,760	96,710
September	1,160	825	901	†27,040	53,630
Water year 1918	21,800	-	2,411	880,059	1,746,000
October 1918	-	-	*900	27,900	55,340
November	1,130	410	749	†22,475	44,580
December	-	-	*449	13,919	27,610
Calendar year 1918	21,800	-	2,397	874,769	1,735,000
January 1919	-	-	*358	11,098	22,010
February	-	-	*346	9,688	19,220
March	1,640	350	655	†20,320	40,300
April	2,120	890	1,598	47,950	95,110
May	5,100	1,420	2,575	79,840	158,400
June	8,050	890	2,138	64,150	127,200
July	890	350	542	16,810	33,340
August	715	330	523	16,215	32,160
September	750	330	499	14,965	29,680
Water year 1919	8,050	-	946	345,330	685,000
October 1919	925	460	724	22,450	44,530
November	960	-	*575	17,250	34,210
December	-	-	*375	11,625	23,060
Calendar year 1919	8,050	-	911	332,361	659,200
January 1920	-	-	*350	10,850	21,520
February	-	-	*375	10,875	21,570
March	1,420	680	935	†28,980	57,480
April	4,030	820	1,707	51,200	101,600
May	9,190	1,220	4,392	136,160	270,100
June	12,300	4,720	8,728	261,830	519,300
July	6,200	2,250	4,051	125,590	249,100
August	2,200	890	1,428	44,260	87,790
September	890	820	881	†26,420	52,400
Water year 1920	12,300	-	2,042	747,490	1,483,000
October 1920	980	760	827	25,630	50,840
November	900	650	766	†22,987	45,590
December	-	-	*500	15,500	30,740
Calendar year 1920	12,300	-	2,077	760,282	1,508,000
January 1921	-	-	*450	13,950	27,670
February	-	-	*500	14,000	27,770
March	2,280	860	1,529	†47,405	94,030
April	4,170	1,340	2,308	69,230	137,300
May	10,100	1,610	4,149	128,620	255,100
June	21,200	c6,910	12,990	389,840	773,200
July	6,050	1,610	2,947	91,370	181,200
August	1,760	1,130	1,383	42,860	85,010
September	c1,060	770	939	28,170	55,870
Water year 1921	21,200	-	2,437	889,562	1,764,000

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1921	770	690	743	23,030	45,680
November	770	620	736	22,090	43,810
December	-	-	*600	18,600	36,890
Calendar year 1921	21,200	-	2,436	889,165	1,764,000
January 1922	-	-	*500	15,500	30,740
February	-	-	*500	14,000	27,770
March	3,650	-	*1,805	55,955	111,000
April	4,090	730	1,822	54,650	108,400
May	8,980	2,980	5,409	167,690	332,600
June	13,000	8,570	10,960	328,730	652,000
July	9,820	1,850	3,574	110,780	219,700
August	2,140	1,560	1,863	57,750	114,500
September	1,560	700	1,130	33,900	67,240
Water year 1922	13,000	-	2,473	902,675	1,790,000
October 1922	770	690	735	22,790	45,200
November	850	-	673	†20,185	40,040
December	-	-	*500	15,500	30,740
Calendar year 1922	13,000	-	2,459	897,430	1,780,000
January 1923	-	-	*400	12,400	24,600
February	-	-	*400	11,200	22,210
March	810	-	*620	19,220	38,120
April	3,650	850	2,017	60,500	120,000
May	10,700	2,980	5,586	173,160	343,500
June	12,100	4,730	7,658	229,740	455,700
July	10,700	3,650	6,000	185,990	368,900
August	3,380	1,180	2,017	62,540	124,000
September	1,640	950	1,084	32,520	64,500
Water year 1923	12,100	-	2,317	845,745	1,678,000
October 1923	1,570	1,040	1,217	37,740	74,860
November	1,120	733	941	28,222	55,980
December	-	-	*550	17,050	33,820
Calendar year 1923	12,100	-	2,384	870,282	1,726,000
January 1924	-	-	*500	15,500	30,740
February	-	-	*550	15,950	31,640
March	1,860	601	941	29,159	57,840
April	8,120	670	2,822	84,647	167,900
May	6,970	1,740	3,951	122,480	242,900
June	4,770	2,240	3,147	94,410	187,300
July	2,850	796	1,734	53,747	106,600
August	858	640	754	23,360	46,330
September	678	608	638	19,153	37,990
Water year 1924	8,120	-	1,479	541,418	1,074,000
October 1924	883	610	687	21,289	42,230
November	769	482	649	19,480	38,640
December	-	-	*475	14,725	29,210
Calendar year 1924	8,120	-	1,404	513,900	1,019,000
January 1925	-	-	*350	10,850	21,520
February	-	-	*450	12,600	24,990
March	2,800	800	1,187	†36,784	72,960
April	2,800	1,060	1,914	57,410	113,900
May	7,370	1,000	3,394	105,210	208,700
June	8,590	3,330	5,788	173,630	344,400
July	10,300	2,700	5,252	162,810	322,900
August	2,500	1,240	1,914	59,320	117,700
September	1,520	1,060	1,232	36,950	73,290
Water year 1925	10,300	-	1,948	711,058	1,410,000
October 1925	1,600	1,060	1,260	39,060	77,470
November	1,240	c615	911	27,324	54,200
December	-	-	*700	21,700	43,040
Calendar year 1925	10,300	-	2,037	743,648	1,475,000
January 1926	-	-	*650	20,150	39,970
February	-	-	*650	18,200	36,100
March	2,700	780	1,339	†41,500	82,310
April	3,120	755	2,335	70,039	138,900
May	4,980	1,930	3,564	110,480	219,100
June	4,460	1,060	2,864	85,930	170,400
July	4,980	1,180	2,062	63,910	126,800
August	1,930	802	1,197	37,122	73,630
September	950	570	739	22,157	43,950
Water year 1926	4,980	-	1,528	557,572	1,106,000

c Revised.

Note.- Estimates of winter discharge 1921-30 and resulting yearly discharge not previously published.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1926	840	606	676	20,961	41,580
November	802	462	638	19,148	37,980
December	-	-	*500	15,500	30,740
Calendar year 1926	4,980	-	1,439	525,097	1,041,000
January 1927	-	-	*450	13,950	27,670
February	-	-	*500	14,000	27,770
March	1,400	624	792	†24,566	48,710
April	2,380	776	1,212	36,349	72,100
May	6,980	1,950	3,552	110,100	218,400
June	14,500	2,610	8,888	266,570	528,700
July	16,200	2,480	5,175	160,410	318,200
August	2,510	1,400	1,829	56,690	112,400
September	3,050	1,020	1,872	56,160	111,400
Water year 1927	16,200	-	2,176	794,394	1,576,000
October 1927	2,160	1,170	1,505	46,660	92,550
November	1,510	1,160	1,330	39,890	79,120
December	-	-	*700	21,700	43,040
Calendar year 1927	16,200	-	2,321	847,035	1,680,000
January 1928	-	-	*500	15,500	30,740
February	-	-	*400	11,600	23,010
March	2,970	-	1,084	†33,589	66,620
April	2,890	890	1,386	41,590	82,490
May	13,100	2,700	6,275	194,540	385,900
June	12,600	3,420	5,367	161,000	319,300
July	4,870	2,910	3,699	114,680	227,500
August	2,860	1,290	1,944	60,270	119,500
September	1,260	750	905	27,152	53,860
Water year 1928	13,100	-	2,099	768,171	1,524,000
October 1928	1,060	640	804	24,916	49,420
November	870	650	730	†21,904	43,450
December	-	-	*480	14,880	29,510
Calendar year 1928	13,100	-	1,972	721,621	1,431,000
January 1929	-	-	*430	13,330	26,440
February	-	-	*400	11,200	22,210
March	-	-	*1,040	32,240	63,950
April	4,860	1,050	2,506	75,180	149,100
May	4,220	2,200	2,822	87,480	173,500
June	7,800	2,470	4,568	137,040	271,800
July	4,530	1,370	2,388	74,020	146,800
August	2,040	990	1,283	39,760	78,860
September	1,810	880	1,236	37,060	73,510
Water year 1929	7,800	-	1,559	569,010	1,129,000
October 1929	1,240	725	944	29,271	58,060
November	761	-	636	†19,093	37,870
December	-	-	*583	18,073	35,850
Calendar year 1929	7,800	-	1,572	573,747	1,138,000
January 1930	-	-	*318	9,858	19,550
February	-	-	*422	11,816	23,440
March	1,560	-	902	†27,974	55,490
April	4,050	1,040	2,723	81,680	162,000
May	4,670	2,000	2,613	81,010	160,700
June	8,260	3,240	5,427	162,800	322,900
July	4,350	1,820	3,028	93,870	186,200
August	8,660	1,820	3,443	106,740	211,700
September	2,000	827	1,214	36,411	72,220
Water year 1930	8,660	-	1,859	678,596	1,346,000
October 1930	2,020	827	1,447	44,871	89,000
November	872	376	666	19,978	39,630
December	-	-	467	e14,470	28,700
Calendar year 1930	8,660	-	1,894	691,478	1,372,000
January 1931	-	-	304	e9,425	18,690
February	-	-	365	e10,220	20,270
March	1,060	-	686	†21,265	42,180
April	1,720	677	1,034	31,025	61,540
May	1,620	641	1,058	32,790	65,040
June	2,950	1,340	1,997	59,900	118,800
July	1,520	334	630	19,545	38,770
August	1,010	466	638	19,776	39,230
September	450	308	357	10,712	21,250
Water year 1931	2,950	-	805	293,977	583,100

e Discharge estimated for successive short periods.

Note.- Estimates of winter discharge 1921-30 and resulting yearly discharge not previously published.

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	480	334	406	12,593	24,980
November	470	-	378	†11,341	22,490
December	-	-	*290	8,990	17,830
Calendar year 1931	2,950	-	678	247,582	491,100
January 1932	-	-	*250	7,750	15,370
February	-	-	*300	8,700	17,260
March	1,250	-	697	†21,598	42,840
April	-	891	1,390	†41,699	82,710
May	7,600	1,240	3,116	96,610	191,600
June	11,900	2,950	5,872	176,150	349,400
July	9,820	2,060	4,199	130,160	258,200
August	2,080	826	1,359	42,114	83,530
September	1,200	500	676	20,291	40,250
Water year 1932	11,900	-	1,579	577,996	1,146,000
October 1932	800	540	611	18,943	37,570
November	716	308	548	16,439	32,610
December	-	-	356	†11,050	21,920
Calendar year 1932	11,900	-	1,616	591,504	1,173,000
January 1933	-	-	251	†7,770	15,410
February	-	-	301	†8,426	16,710
March	-	-	*440	13,640	27,050
April	2,040	430	1,000	30,014	59,530
May	1,990	958	1,260	39,058	77,470
June	11,600	2,180	6,351	190,540	377,900
July	3,990	1,120	2,175	67,420	133,700
August	1,100	550	707	21,905	43,450
September	592	398	485	14,536	28,830
Water year 1933	11,600	-	1,205	439,741	872,200
October 1933	470	398	441	13,682	27,140
November	592	355	471	†14,144	28,050
December	-	-	*430	13,330	26,440
Calendar year 1933	11,600	-	1,190	434,465	861,700
January 1934	-	-	*310	9,610	19,060
February	-	-	*430	12,040	23,880
March	793	409	575	17,838	35,380
April	515	225	376	11,276	22,370
May	1,850	292	1,272	39,422	78,190
June	1,400	564	846	25,388	50,360
July	691	269	430	13,326	26,430
August	572	311	476	14,771	29,300
September	298	234	258	†7,733	15,340
Water year 1934	1,850	225	528	192,560	381,900
October 1934	385	260	314	9,740	19,320
November	355	217	301	†9,034	17,920
December	-	-	293	†9,080	18,010
Calendar year 1934	1,850	217	491	179,258	355,600
January 1935	-	-	293	†9,075	18,000
February	-	-	325	†9,099	18,050
March	1,190	306	532	†16,507	32,740
April	1,630	667	997	29,917	59,340
May	3,910	625	1,222	37,891	75,160
June	11,900	2,120	6,009	180,260	357,500
July	4,240	998	2,089	64,746	128,400
August	1,280	525	828	25,658	50,890
September	525	325	408	12,231	24,260
Water year 1935	11,900	217	1,132	413,238	819,600
October 1935	410	312	353	10,942	21,700
November	500	326	431	†12,923	25,630
December	-	-	270	†8,360	16,580
Calendar year 1935	11,900	-	1,144	417,609	828,200
January 1936	-	-	257	†7,952	15,770
February	-	-	369	†10,700	21,220
March	690	420	580	†17,965	35,630
April	5,570	320	2,626	†78,776	156,200
May	9,610	4,220	6,422	199,090	394,900
June	15,300	5,020	8,071	242,130	480,300
July	4,630	1,850	2,805	86,960	172,500
August	4,130	942	1,960	60,759	120,500
September	1,090	670	835	25,064	49,710
Water year 1936	15,300	-	2,091	761,621	1,511,000

Monthly summary of discharge of Green River at Green River, Wyo., 1891, 1895-99, 1900-1906, 1914-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-feet-days	Acre-feet
October 1936	966	624	686	21,254	42,160
November	717	460	608	18,227	36,150
December	500	430	447	13,870	27,510
Calendar year 1936	c15,300	(d)	c2,139	c782,747	c1,553,000
January 1937	430	330	360	11,157	22,130
February	400	325	355	9,936	19,700
March	995	400	621	19,257	38,200
April	6,860	1,100	2,924	87,720	174,000
May	6,640	1,730	3,810	118,400	234,800
June	7,530	2,900	4,511	129,330	256,500
July	9,950	1,660	3,492	108,240	214,700
August	1,830	690	1,148	35,599	70,610
September	730	500	597	17,910	35,520
Water year 1937	9,950	325	1,619	590,894	1,172,000
October 1937	600	530	556	†17,240	34,200
November	-	-	#475	14,250	28,260
December	-	-	#375	11,625	23,060
Calendar year 1937	9,950	325	1,591	580,658	1,152,000
January 1938	-	-	#340	10,540	20,910
February	-	-	#400	11,200	22,210
March	920	410	552	†17,097	33,910
April	6,010	930	2,631	78,936	156,600
May	6,550	1,620	3,044	94,360	187,200
June	10,000	5,040	6,848	†205,430	407,500
July	6,000	1,800	3,373	†104,550	207,400
August	1,750	774	1,119	†34,698	68,820
September	3,020	758	1,257	37,702	74,780
Water year 1938	10,000	-	1,747	637,628	1,265,000

c Revised.
d Previously published figure discarded.

Yearly discharge of Green River at Green River, Wyo., 1896-99, 1901-6, 1915-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1896	‡1,993	1,447,000	2,060	1,495,000
1897	‡2,280	1,650,000	2,320	1,680,000
1898	2,181	1,579,000	2,074	1,501,000
1899	‡3,458	2,503,000	3,622	2,622,000
1901	‡1,791	1,297,000	1,762	1,276,000
1902	1,431	1,036,000	1,386	1,011,000
1903	1,805	1,307,000	1,930	1,397,000
1904	2,580	1,873,000	2,525	1,833,000
1905	‡1,396	1,010,000	1,348	976,200
1906	2,053	1,486,000	2,101	1,521,000
1915	1,152	834,000	1,250	905,000
1916	2,413	1,752,000	2,345	1,702,000
1917	2,868	2,076,000	2,908	2,105,000
1918	2,411	1,746,000	2,397	1,735,000
1919	946	685,000	911	659,200
1920	2,042	1,483,000	2,077	1,508,000
1921	2,437	1,764,000	2,436	1,764,000
1922	2,473	1,790,000	2,459	1,780,000
1923	2,317	1,678,000	2,384	1,726,000
1924	1,479	1,074,000	1,404	1,019,000
1925	1,948	1,410,000	2,037	1,475,000
1926	1,528	1,106,000	1,439	1,041,000
1927	2,176	1,576,000	2,321	1,680,000
1928	2,099	1,524,000	1,972	1,431,000
1929	1,559	1,129,000	1,572	1,138,000
1930	1,859	1,346,000	1,894	1,372,000
1931	805	583,100	678	491,100
1932	1,579	1,146,000	1,616	1,173,000
1933	1,205	872,200	1,190	861,700
1934	528	381,900	491	355,600
1935	1,132	819,600	1,144	828,200
1936	2,081	1,511,000	a2,139	a1,553,000
1937	1,619	1,172,000	1,591	1,152,000
1938	1,747	1,265,000	-	-

a Revised.

GREEN RIVER NEAR LINWOOD, UTAH

Location.- Lat. 40°58', long. 109°35', in SW¼ sec. 29, T. 3 N., R. 21 E., a quarter of a mile upstream from Henrys Fork, 2 miles south of Wyoming-Utah State line, and 5 miles southeast of Linwood.

Drainage area.- 14,300 square miles.

Records available.- October 1928 to September 1938.

Average discharge.- 10 years (water years 1929-38), 1,686 second-feet.

Extremes.- 1928-38: Maximum discharge, 15,200 second-feet June 4, 1936 (gage height, 10.11 feet); minimum, 196 second-feet Nov. 27, 1934 (gage height, -0.10 foot).

Gage.- Water-stage recorder on right bank a quarter of a mile upstream from Henrys Fork since Oct. 17, 1930. Intake and gage datum lowered 0.77 foot on Nov. 14, 1933. Zero of present gage is 5,844.64 feet above mean sea level.
Oct. 26, 1928, to Oct. 17, 1930, water-stage recorder on right bank half a mile upstream with independent gage datum.

Remarks.- Records good except for periods of ice effect each winter and occasional periods of receding stage or low water when silt clogged the intakes to stilling well, particularly prior to Nov. 14, 1933, which were estimated or computed from partial gage-height record, discharge measurements, weather records, and in some cases comparison with flow at Green River, Wyo., and are fair. Diversions for irrigation above station.

Monthly summary of discharge of Green River near Linwood, Utah, 1928-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	1,090	620	813	†25,207	50,000
November	936	552	745	†22,337	44,300
December	-	-	*500	15,500	30,740
January 1929	-	-	*450	13,950	27,670
February	-	-	*450	12,600	24,990
March	4,000	450	2,040	†63,250	125,500
April	5,400	2,090	3,677	110,300	218,900
May	7,130	3,350	4,718	146,250	290,100
June	8,090	4,690	5,898	176,940	351,000
July	4,850	1,560	2,819	87,400	173,400
August	2,180	1,220	1,476	†45,770	90,780
September	2,500	1,100	1,618	†48,530	96,260
Water year 1929	8,090	-	2,104	768,034	1,524,000
October 1929	1,450	985	1,185	†36,735	72,860
November	1,010	-	870	†26,107	51,780
December	960	-	779	†24,158	47,920
Calendar year 1929	8,090	-	2,170	791,990	1,571,000
January 1930	-	-	424	a13,150	26,080
February	-	-	629	a17,600	34,910
March	1,760	-	1,145	†35,500	70,410
April	4,660	1,230	3,497	104,900	208,100
May	5,550	2,750	3,546	109,930	218,000
June	8,540	4,630	6,523	195,690	388,100
July	4,870	1,810	3,329	103,210	204,700
August	12,700	1,660	4,689	†145,360	288,300
September	2,350	910	1,366	†40,990	81,300
Water year 1930	12,700	-	2,338	853,330	1,692,000
October 1930	2,160	1,000	1,641	†50,860	100,900
November	1,100	460	790	23,698	47,000
December	-	-	519	a16,090	31,910
Calendar year 1930	12,700	-	2,348	856,978	1,700,000
January 1931	-	-	314	a9,735	19,310
February	-	-	381	a10,680	21,180
March	-	-	878	†27,210	53,970
April	1,920	729	1,259	37,760	74,900
May	1,960	693	1,163	36,044	71,490
June	3,230	1,430	2,190	65,690	130,300
July	1,600	390	733	†22,729	45,080
August	1,160	540	722	†22,379	44,390
September	475	284	364	†10,921	21,660
Water year 1931	3,230	-	‡915	333,796	662,100

a Discharge estimated for successive short periods.

Monthly summary of discharge of Green River near Linwood, Utah, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	1,040	340	462	†14,323	28,410
November	470	-	394	†11,812	23,430
December	-	-	*300	9,300	18,450
Calendar year 1931	3,230	-	763	278,583	552,600
January 1932	-	-	*260	8,060	15,990
February	-	-	*350	10,150	20,130
March	-	-	1,133	a35,120	69,660
April	3,300	1,540	2,105	63,150	125,300
May	9,180	2,190	4,382	135,850	269,500
June	10,700	4,160	6,556	196,680	390,100
July	10,200	2,170	4,329	134,200	266,200
August	2,090	1,090	1,554	48,170	95,540
September	1,800	560	810	24,301	48,200
Water year 1932	10,700	-	1,888	691,116	1,371,000
October 1932	740	521	631	19,556	38,790
November	756	548	642	19,246	38,170
December	732	-	423	†13,109	26,000
Calendar year 1932	10,700	-	1,933	707,592	1,404,000
January 1933	-	-	307	a9,525	18,890
February	-	-	346	a9,674	19,190
March	1,090	-	594	†18,400	36,500
April	2,230	870	1,348	40,430	80,190
May	2,570	1,340	1,819	56,400	111,900
June	11,700	2,770	7,523	225,690	447,600
July	4,540	1,190	2,639	81,800	162,200
August	1,120	543	722	22,374	44,380
September	598	416	501	15,036	29,820
Water year 1933	11,700	-	1,455	531,240	1,054,000
October 1933	470	420	443	†13,726	27,230
November	516	334	461	†13,819	27,410
December	612	-	462	†14,325	28,410
Calendar year 1933	11,700	-	1,428	521,199	1,034,000
January 1934	-	200	315	†9,751	19,340
February	580	-	441	†12,335	24,470
March	932	490	684	21,195	42,040
April	730	311	493	14,790	29,340
May	1,800	334	1,171	36,314	72,030
June	1,550	560	889	26,681	52,920
July	606	276	427	13,234	26,250
August	715	327	494	15,317	30,380
September	317	230	268	8,029	15,930
Water year 1934	1,800	200	547	199,516	395,800
October 1934	412	270	309	9,585	19,010
November	348	232	312	9,370	18,590
December	329	270	303	†9,394	18,630
Calendar year 1934	1,800	200	510	185,995	368,900
January 1935	330	278	303	†9,404	18,650
February	362	311	336	†9,399	18,640
March	995	351	550	†17,050	33,820
April	1,800	730	1,074	32,222	63,910
May	4,750	1,020	1,575	48,820	96,830
June	12,400	3,140	6,819	204,580	405,800
July	4,440	1,120	2,302	71,370	141,600
August	1,330	632	926	28,717	56,960
September	592	317	406	12,193	24,180
Water year 1935	12,400	232	1,266	462,104	916,600
October 1935	420	305	344	10,653	21,130
November	562	301	408	12,246	24,290
December	298	238	273	†8,465	16,790
Calendar year 1935	12,400	238	1,274	465,119	922,600
January 1936	288	227	254	†7,870	15,610
February	608	252	417	†12,094	23,990
March	944	636	793	†24,582	48,760
April	5,840	354	2,798	83,954	166,500
May	11,900	5,710	8,172	253,330	502,500
June	14,700	5,150	8,283	248,490	492,900
July	4,830	1,830	2,938	91,090	180,700
August	6,020	910	2,446	75,824	150,400
September	1,580	650	948	28,444	56,420
Water year 1936	14,700	227	2,342	857,042	1,700,000

a Discharge estimated for successive short periods.

Monthly summary of discharge of Green River near Linwood, Utah, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	1,180	582	‡738	22,887	45,400
November	874	460	712	21,362	42,370
December	550	430	463	‡14,365	28,490
Calendar year 1936	14,700	227	2,416	884,292	1,754,000
January 1937	440	340	367	‡11,380	22,570
February	400	330	364	‡10,180	20,190
March	1,750	410	956	‡29,640	58,790
April	8,160	1,730	3,489	104,670	207,610
May	7,160	2,580	5,204	161,330	320,000
June	7,600	3,950	4,973	149,180	295,900
July	9,800	1,830	3,601	111,620	221,400
August	1,840	650	1,160	35,958	71,320
September	650	496	569	17,069	33,860
Water year 1937	9,800	330	1,889	689,641	1,368,000
October 1937	656	488	558	17,302	34,320
November	558	380	483	‡14,500	28,760
December	420	330	382	‡11,840	23,480
Calendar year 1937	9,800	330	1,848	674,669	1,338,000
January 1938	390	300	347	‡10,746	21,310
February	560	360	440	‡12,325	24,450
March	1,660	620	971	‡30,109	59,720
April	7,400	910	3,411	102,331	203,000
May	7,470	2,250	4,255	131,900	261,600
June	9,980	6,110	7,759	232,780	461,700
July	6,860	2,050	3,842	119,110	236,300
August	1,950	788	1,240	38,428	76,220
September	5,410	743	1,717	51,519	102,200
Water year 1938	9,980	300	2,118	772,890	1,533,000

Yearly discharge of Green River near Linwood, Utah, 1929-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1929	2,104	1,524,000	2,170	1,571,000
1930	2,338	1,692,000	2,348	1,700,000
1931	‡915	662,100	763	552,600
1932	1,888	1,371,000	1,933	1,404,000
1933	1,455	1,054,000	1,428	1,034,000
1934	547	395,800	510	368,900
1935	1,266	916,600	1,274	922,600
1936	2,342	1,700,000	2,416	1,754,000
1937	1,889	1,368,000	1,848	1,338,000
1938	2,118	1,533,000	-	-

HENRYS FORK AT LINWOOD, UTAH.

Location.- Lat. 41°00', long. 109°39', in sec. 23, T. 12 N., R. 109 W., in Wyoming, 200 feet north of Utah State line, at Linwood.

Drainage area.- 531 square miles.

Records available.- October 1928 to September 1938.

Average discharge.- 10 years (water years, 1929-38), 74.8 second-feet.

Extremes.- 1928-38: Maximum discharge, 6,750 second-feet Aug. 3, 1936 (gage height, 7.2 feet, from flood marks) by slope-area method; no flow several days in 1934 and 1935.

Gage.- Water-stage recorder at highway bridge at Linwood since Aug. 6, 1938. Zero of gage is 5,992.57 feet above mean sea level.
Oct. 10, 1928, to Aug. 3, 1936, and Aug. 21, 1936, to May 8, 1937, staff gage; and May 8, 1937, to Aug. 6, 1938, chain gage; at same site. All gages at same datum except temporary staff gage used Aug. 21, 1936, to May 8, 1937, which was set 1 foot higher.

Remarks.- Records good, except for periods estimated. Winter records were computed from one or two discharge measurements each winter and from weather records, and are fair. Records Aug. 3-21, 1936, were estimated, and are poor; flood on Aug. 3 destroyed bridge and gage. Diversions for irrigation above station.

Monthly summary of discharge of Henrys Fork at Linwood, Utah, 1928-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	72	16	36.8	†1,140	2,260
November	72	38	50.4	1,511	3,000
December	-	-	*42	1,302	2,580
January 1929	-	-	*35	1,085	2,150
February	-	-	*50	1,400	2,780
March	450	49	165	†5,112	10,140
April	303	66	115	3,450	6,840
May	854	67	227	7,051	13,990
June	958	314	511	15,335	30,420
July	308	76	169	5,242	10,400
August	279	60	147	4,559	9,040
September	474	103	191	5,722	11,350
Water year 1929	958	16	145	52,909	105,000
October 1929	147	80	117	3,619	7,180
November	131	66	96.3	2,890	5,730
December	-	-	*50	1,550	3,070
Calendar year 1929	958	-	156	57,015	113,100
January 1930	-	-	*30	930	1,840
February	-	-	*40	1,120	2,220
March	77	-	52.9	†1,641	3,250
April	182	77	125	3,757	7,450
May	489	74	154	4,761	9,440
June	394	35	171	5,133	10,180
July	119	10	39.9	1,238	2,460
August	1,320	40	248	7,683	15,240
September	127	56	80.7	2,420	4,800
Water year 1930	1,320	10	101	36,748	72,860
October 1930	109	66	83.6	2,593	5,140
November	69	-	51.4	†1,542	3,060
December	-	-	*30	930	1,840
Calendar year 1930	1,320	10	92.5	33,748	66,920
January 1931	-	-	*30	930	1,840
February	-	-	*40	1,120	2,220
March	66	22	44.5	†1,379	2,740
April	105	19	55.3	1,659	3,290
May	226	10	60.6	1,880	3,730
June	142	2.4	44.8	1,344.7	2,670
July	109	.1	6.5	194	385
August	105	.1	9.8	304.8	605
September	3.4	.1	.8	14.4	29
Water year 1931	226	.1	38.1	13,890.9	27,550
October 1931	10	0.3	3.9	120.7	239
November	39	15	27.1	†812	1,610
December	-	-	*22	682	1,350
Calendar year 1931	226	.1	28.6	10,440.6	20,710

Note.- Records for December 1928 to February 1929 and resulting yearly discharge not previously published.

Monthly summary of discharge of Henrys Fork at Linwood, Utah, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1932	-	-	#20	620	1,230
February	-	-	#30	870	1,730
March	166	-	87.4	†2,709	5,370
April	183	57	85.7	2,571	5,100
May	770	65	249	7,733	15,340
June	504	127	272	8,168	16,200
July	180	10	63.9	1,982	3,930
August	74	9	24.6	764	1,520
September	57	11	23.4	703	1,390
Water year 1932	770	.3	75.8	27,734.7	55,010
October 1932	63	16	34.1	1,058	2,100
November	76	42	59.3	1,780	3,530
December	-	-	20.5	a634	1,260
Calendar year 1932	770	9	80.9	29,592	58,700
January 1933	-	-	15.2	a471	934
February	-	-	15.0	a419	831
March	111	-	71.0	†2,201	4,370
April	201	33	77.2	2,317	4,600
May	268	63	88.1	2,732	5,420
June	882	6.5	352	10,551.5	20,930
July	336	1.1	27.3	847.7	1,680
August	28	.2	1.9	58.9	117
September	.2	0	.1	3.7	7
Water year 1933	882	0	63.2	23,073.8	45,780
October 1933	3.8	0	0.9	26.7	53
November	27	5.6	17.7	530.6	1,050
December	-	-	#25	775	1,540
Calendar year 1933	882	0	57.4	20,934.1	41,530
January 1934	-	-	#30	930	1,840
February	-	-	#40	1,120	2,220
March	-	-	#45	1,395	2,770
April	133	4.6	34.1	1,022.8	2,030
May	21	.6	5.4	166.7	331
June	1.0	0	.1	3.0	6
July	0	0	0	0	0
August	58	0	2.0	62.3	124
September	0	0	0	0	0
Water year 1934	133	0	16.5	6,032.1	11,960
October 1934	0	0	0	0	0
November	53	0	12.8	383.9	761
December	-	-	34.1	†1,058	2,100
Calendar year 1934	133	0	‡16.8	6,141.7	12,180
January 1935	-	-	#24	744	1,480
February	-	-	#32	896	1,780
March	-	-	#34	1,054	2,090
April	12	1.5	3.9	118.3	235
May	92	1.6	18.2	563.7	1,120
June	1,020	32	328	9,838	19,510
July	69	.2	8.1	250.4	497
August	4.6	.3	1.5	45.2	90
September	1.4	.4	.9	25.7	51
Water year 1935	1,020	0	41.0	14,977.2	29,710
October 1935	11	0.8	3.4	105.3	209
November	38	10	28.8	863	1,710
December	42	-	30.5	†946	1,880
Calendar year 1935	1,020	.2	42.3	15,449.6	30,650
January 1936	-	-	#20	620	1,230
February	-	-	#28	812	1,610
March	-	-	41.9	†1,299	2,580
April	96	16	51.3	1,541	3,060
May	188	4.6	58.6	1,816.5	3,600
June	140	4.6	30.5	913.6	1,810
July	702	2.6	105	3,267.5	6,480
August	3,550	73	298	b9,232	18,310
September	113	57	74.6	2,239	4,440
Water year 1936	3,550	.8	64.6	23,654.9	46,920
October 1936	86	58	68.8	2,133	4,230
November	77	57	65.5	1,965	3,900
December	71	36	56.8	†1,731	3,430
Calendar year 1936	3,550	2.6	75.3	27,569.6	54,680

a Discharge estimated for successive short periods.
b Destructive flood Aug. 3; daily discharge estimated Aug. 3-21.

Monthly summary of discharge of Henrys Fork at Linwood, Utah, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1937	-	-	*27	837	1,660
February	-	-	*41	1,148	2,280
March	-	-	*72	2,232	4,430
April	171	88	108	†3,228	6,400
May	463	112	252	7,821	15,510
June	412	124	204	6,135	12,160
July	448	42	149	4,619	9,160
August	67	5.8	22.5	698.3	1,390
September	113	29	61.6	1,847	3,660
Water year 1937	463	5.8	94.2	34,386.3	68,200
October 1937	98	48	64.3	1,993	3,950
November	77	53	62.0	1,861	3,690
December	69	50	58.8	†1,822	3,610
Calendar year 1937	463	5.8	93.8	34,232.3	67,890
January 1938	-	-	*48	1,488	2,950
February	-	-	*45	1,260	2,500
March	96	46	63.1	†1,956	3,880
April	240	50	109	3,277	6,500
May	696	38	247	7,645	15,160
June	796	126	371	11,124	22,060
July	277	24	89.4	2,772	5,500
August	60	6.5	16.8	520.9	1,030
September	231	85	134	4,015	7,960
Water year 1938	796	6.5	109	39,735.9	78,790

Yearly discharge of Henrys Fork at Linwood, Utah, 1929-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1929	145	105,000	156	113,100
1930	101	72,860	92.5	66,920
1931	38.1	27,550	28.6	20,710
1932	75.8	55,010	80.9	58,700
1933	63.2	45,780	57.4	41,530
1934	16.5	11,960	‡16.8	12,180
1935	41.0	29,710	42.3	30,650
1936	64.6	45,920	75.3	54,680
1937	94.2	68,200	93.8	67,890
1938	109	78,790	-	-

GREEN RIVER AT FLAMING GORGE, NEAR LINWOOD, UTAH

Location.- Lat. 40°57', long. 109°38', in NW¼SW¼ sec. 31, T. 3 N., R. 21 E., at upstream end of Horseshoe Canyon, 1 mile downstream from Flaming Gorge, 2 miles downstream from Henrys Fork, and 4 miles southeast of Linwood.

Drainage area.- 14,900 square miles.

Records available.- October 1923 to September 1928. Also included are records for October 1928 to September 1938 obtained by combining records of Henrys Fork at Linwood (6 miles upstream) with those of Green River near Linwood (2¼ miles upstream). There are no appreciable tributaries or diversions between these stations and Flaming Gorge.

Average discharge.- 15 years (water years, 1924-38), 1,871 second-feet.

Extremes.- 1923-38: Maximum daily mean discharge, 15,400 second-feet July 1, 1927; minimum daily mean discharge, about 230 second-feet Jan. 11, Sept. 22, 1934.

Gage.- Water-stage recorder at upstream end of Horseshoe Canyon, October 1923 to September 1928.

Cooperation.- Station constructed and operated during 1923-27 by Utah Power and Light Company which furnished records of maximum, minimum, and monthly mean discharge in second-feet for November 1923 and calendar years 1924-27.

Remarks.- Records good except for periods estimated which are fair. Winter discharge affected by ice at all three stations. Diversions for irrigation above stations.

Monthly summary of discharge of Green River at Flaming Gorge, near Linwood, Utah, 1923-38

(* Estimated; † Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	-	-	*1,210	37,510	74,400
November	1,260	850	1,080	32,400	64,260
December	-	-	*620	19,220	38,130
January 1924	-	-	*450	13,950	27,670
February	-	-	*720	20,880	41,410
March	-	-	*950	29,450	58,410
April	13,500	920	5,400	162,000	321,300
May	9,330	2,700	5,710	177,010	351,100
June	6,100	2,420	3,790	113,700	225,600
July	2,800	845	1,850	57,350	113,800
August	835	564	705	21,855	43,350
September	596	510	541	16,230	32,190
Water year 1924	13,500	-	1,917	701,555	1,392,000
October 1924	900	513	633	19,623	38,920
November	-	-	*580	17,400	34,510
December	-	-	*400	12,400	24,600
Calendar year 1924	13,500	-	1,808	661,848	1,313,000
January 1925	-	-	*440	13,640	27,050
February	-	-	*530	14,840	29,430
March	-	-	*1,650	51,150	101,500
April	2,680	1,360	2,140	64,200	127,300
May	7,700	1,230	3,960	122,760	243,500
June	9,080	3,560	6,170	185,100	367,100
July	10,900	2,620	5,570	172,670	342,500
August	2,740	1,300	1,920	59,520	118,100
September	2,170	1,240	1,480	44,400	88,070
Water year 1925	10,900	-	2,131	777,703	1,543,000
October 1925	1,900	1,240	1,480	45,888	91,000
November	1,330	-	993	†29,790	59,090
December	-	-	*720	22,320	44,270
Calendar year 1925	10,900	-	2,264	826,270	1,639,000
January 1926	-	-	*580	17,980	35,660
February	-	-	*690	19,320	38,320
March	2,870	-	1,570	†48,670	96,540
April	3,350	1,000	2,580	77,400	153,500
May	6,340	2,430	4,340	134,540	266,900
June	4,800	1,070	3,150	94,500	187,400
July	7,390	1,180	2,440	75,640	150,000
August	3,090	894	1,400	43,400	86,080
September	978	558	743	22,290	44,210
Water year 1926	7,390	-	1,731	631,730	1,253,000

Note.- Runoff computed from mean discharge, October 1923 to March 1928.

Monthly summary of discharge of Green River at Flaming Gorge, near Linwood, Utah, 1923-38-Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1926	1,440	-	718	†22,258	44,150
November	810	509	657	19,710	39,090
December	870	-	649	†20,119	39,910
Calendar year 1926	7,390	-	1,632	595,827	1,182,000
January 1927	-	-	*600	18,600	36,890
February	-	-	*720	20,160	39,990
March	2,370	-	1,190	†36,890	73,170
April	2,660	1,210	1,610	48,300	95,800
May	8,600	2,550	4,470	138,570	274,800
June	13,900	3,060	8,830	264,900	525,400
July	15,400	2,500	5,690	176,390	349,900
August	2,480	1,200	1,660	51,460	102,100
September	-	-	*1,200	36,000	71,400
Water year 1927	15,400	-	2,338	853,357	1,693,000
October 1927	-	-	*1,800	55,800	110,700
November	-	-	*1,300	39,000	77,360
December	-	-	*800	24,800	49,190
Calendar year 1927	15,400	-	2,496	910,870	1,807,000
January 1928	-	-	*840	26,040	51,650
February	-	-	*680	19,720	39,110
March	-	-	*1,600	49,600	98,380
April	3,420	1,200	1,607	48,220	95,640
May	15,200	3,790	8,595	266,440	528,500
June	14,600	3,160	5,461	163,820	324,900
July	4,200	2,290	3,143	97,430	193,200
August	2,320	970	1,461	45,302	89,860
September	-	-	682	†20,446	40,550
Water year 1928	15,200	-	2,340	856,618	1,699,000
October 1928	1,130	636	850	†26,347	52,260
November	977	-	795	†23,848	47,300
December	-	-	*542	16,802	33,330
Calendar year 1928	15,200	-	2,197	804,015	1,595,000
January 1929	-	-	*485	15,035	29,820
February	-	-	*500	14,000	27,770
March	4,300	550	2,205	†68,362	135,600
April	5,500	2,160	3,792	113,750	225,600
May	7,580	3,430	4,945	153,301	304,100
June	8,460	5,000	6,409	192,275	381,400
July	5,100	1,660	2,988	92,642	183,800
August	2,380	1,370	1,624	†50,329	99,830
September	2,710	1,220	1,808	†54,252	107,600
Water year 1929	8,460	-	2,249	820,943	1,628,000
October 1929	1,580	1,090	1,302	†40,354	80,040
November	1,110	-	967	†28,997	57,510
December	-	-	829	†25,708	50,990
Calendar year 1929	8,460	-	2,326	849,005	1,684,000
January 1930	-	-	454	a14,080	27,930
February	-	-	669	a18,720	37,130
March	1,830	-	1,198	†37,141	73,670
April	4,820	1,310	3,622	108,657	215,500
May	6,010	2,850	3,700	114,691	227,500
June	8,690	4,970	6,694	200,823	398,300
July	4,890	1,830	3,369	104,448	207,200
August	13,100	1,710	4,937	†153,043	303,600
September	2,460	986	1,447	†43,410	86,100
Water year 1930	13,100	-	2,439	890,072	1,765,000
October 1930	2,250	1,080	1,724	†53,453	106,000
November	1,170	495	841	†25,240	50,060
December	-	-	549	a17,020	33,760
Calendar year 1930	13,100	-	2,440	890,726	1,767,000
January 1931	-	-	344	a10,665	21,150
February	-	-	421	a11,800	23,400
March	-	-	922	†28,589	56,710
April	1,990	748	1,314	39,419	78,190
May	2,060	735	1,223	37,924	75,220
June	3,340	1,430	2,234	67,035	133,000
July	1,600	390	739	†22,923	45,470
August	1,200	565	732	†22,684	44,990
September	478	284	364	†10,935	21,690
Water year 1931	3,340	284	953	347,687	689,600

a Discharge estimated for successive short periods.

Note.- Runoff computed from mean discharge, October 1923 to March 1928. Records 1929-38 are combinations of Green River near Linwood and Henrys Fork at Linwood.

Monthly summary of discharge of Green River at Flaming Gorge, near Linwood, Utah, 1923-38-Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	1,050	342	466	†14,444	28,650
November	488	-	421	†12,624	25,040
December	-	-	*322	9,982	19,800
Calendar year 1931	3,340	-	792	289,024	573,300
January 1932	-	-	*280	8,680	17,220
February	-	-	*380	11,020	21,860
March	-	-	1,220	a37,829	75,030
April	3,440	1,600	2,191	65,721	130,400
May	9,610	2,270	4,632	143,583	284,800
June	10,900	4,460	6,828	204,848	406,300
July	10,400	2,250	4,393	136,182	270,100
August	2,160	1,120	1,579	48,934	97,060
September	1,860	575	833	25,004	49,590
Water year 1932	10,900	-	1,964	718,851	1,426,000
October 1932	794	539	665	20,614	40,890
November	824	594	701	21,026	41,700
December	-	-	443	†13,743	27,260
Calendar year 1932	10,900	-	2,014	737,184	1,462,000
January 1933	-	-	322	a9,998	19,830
February	-	-	360	a10,093	20,020
March	1,150	-	665	†20,601	40,860
April	2,350	915	1,425	42,747	84,790
May	2,740	1,410	1,907	59,132	117,300
June	12,000	3,310	7,875	236,242	468,600
July	4,540	1,190	2,666	82,648	163,900
August	1,150	544	724	22,433	44,500
September	598	416	501	15,040	29,830
Water year 1933	12,000	-	1,519	554,315	1,099,000
October 1933	470	420	444	†13,753	27,280
November	543	346	478	†14,350	28,460
December	-	-	487	†15,100	29,950
Calendar year 1933	12,000	-	1,485	542,135	1,075,000
January 1934	-	-	345	†10,681	21,190
February	-	-	481	†13,455	26,690
March	-	-	729	†22,590	44,810
April	863	316	527	15,810	31,360
May	1,800	338	1,177	36,481	72,360
June	1,550	560	889	26,684	52,930
July	606	276	427	13,234	26,250
August	715	327	496	15,379	30,500
September	317	230	268	8,029	15,930
Water year 1934	1,800	230	563	205,546	407,700
October 1934	412	270	309	9,585	19,010
November	364	279	325	9,754	19,350
December	-	-	337	†10,452	20,730
Calendar year 1934	1,800	230	526	192,134	381,100
January 1935	-	-	327	†10,148	20,130
February	-	-	368	†10,295	20,420
March	-	-	584	†18,104	35,910
April	1,800	733	1,078	32,340	64,150
May	4,810	1,020	1,593	49,384	97,950
June	12,900	3,280	7,147	214,418	425,300
July	4,510	1,120	2,310	71,620	142,100
August	1,330	633	928	28,762	57,050
September	593	318	407	12,219	24,240
Water year 1935	12,900	-	1,307	477,081	946,300
October 1935	431	306	347	10,758	21,340
November	588	337	437	13,109	26,000
December	340	-	304	†9,411	18,670
Calendar year 1935	12,900	-	1,317	480,568	953,300
January 1936	-	-	274	†8,490	16,840
February	-	-	445	†12,906	25,600
March	-	-	835	†25,881	51,330
April	5,870	405	2,850	85,495	169,600
May	12,000	5,720	8,231	255,146	506,100
June	14,800	5,160	8,313	249,404	494,700
July	4,840	1,890	3,044	94,358	187,200
August	8,970	983	2,744	85,056	168,700
September	1,670	719	1,023	30,683	60,860
Water year 1936	14,800	-	2,406	880,697	1,747,000

a Discharge estimated for successive short periods.

Note.- Records 1929-38 are combinations of Green River near Linwood and Henrys Fork at Linwood.

Monthly summary of discharge of Green River at Flaming Gorge, near Linwood, Utah, 1923-38-Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	1,260	641	807	25,020	49,630
November	940	532	778	23,327	46,270
December	610	466	519	†16,096	31,930
Calendar year 1936	14,800	-	2,491	911,862	1,809,000
January 1937	-	-	394	†12,217	24,230
February	-	-	405	†11,328	22,470
March	-	-	1,028	†31,872	63,220
April	8,260	1,820	3,597	†107,898	214,000
May	7,360	2,720	5,456	169,151	335,500
June	7,900	4,130	5,177	155,313	308,100
July	10,100	1,890	3,749	116,232	230,500
August	1,910	678	1,182	36,656	72,710
September	756	547	631	18,916	37,520
Water year 1937	10,100	-	1,984	724,026	1,436,000
October 1937	735	540	622	19,295	38,270
November	628	440	545	†16,361	32,450
December	478	381	441	†13,682	27,100
Calendar year 1937	10,100	-	1,942	708,901	1,406,000
January 1938	-	-	395	†12,234	24,270
February	-	-	485	†13,585	26,950
March	1,710	680	1,034	†32,065	63,600
April	7,640	986	3,520	105,608	209,500
May	8,110	2,290	4,501	139,545	276,800
June	10,400	6,340	8,130	243,904	483,800
July	7,060	2,080	3,932	121,882	241,700
August	1,980	804	1,256	38,949	77,250
September	5,580	831	1,851	55,534	110,200
Water year 1938	10,400	-	2,226	812,624	1,612,000

Note.- Records 1929-38 are combinations of Green River near Linwood and Henrys Fork at Linwood.

Yearly discharge of Green River at Flaming Gorge, near Linwood, Utah, 1924-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1924	1,917	1,392,000	1,808	1,313,000
1925	2,131	1,543,000	2,264	1,639,000
1926	1,731	1,253,000	1,632	1,182,000
1927	2,338	1,693,000	2,496	1,807,000
1928	2,340	1,699,000	2,197	1,595,000
1929	2,249	1,628,000	2,326	1,684,000
1930	2,439	1,765,000	2,440	1,767,000
1931	953	689,600	792	573,300
1932	1,964	1,426,000	2,014	1,462,000
1933	1,519	1,099,000	1,485	1,075,000
1934	563	407,700	526	381,100
1935	1,307	946,300	1,317	953,300
1936	2,406	1,747,000	2,491	1,809,000
1937	1,984	1,436,000	1,942	1,406,000
1938	2,226	1,612,000	-	-

GREEN RIVER AT AND NEAR BRIDGEPORT, UTAH

Location.- In SW¼ sec. 31, T. 2 N., R. 25 E., half a mile downstream from Sears Creek at Bridgeport, 4⅛ miles upstream from former site, and 6⅛ miles upstream from Utah-Colorado State line, 1914-15.
1911-14: In SE¼SW¼ sec. 3, T. 1 N., R. 25 E., at ferry an eighth of a mile upstream from Willow Creek, 2 miles upstream from Utah-Colorado State line, and 4 miles southeast of Bridgeport (Taylor Ranch).

Drainage area.- 15,700 square miles at Bridgeport (15,800 square miles near Bridgeport).

Records available.- October 1914 to September 1915 at Bridgeport. October 1911 to September 1914 near Bridgeport, 4⅛ miles downstream.

Average discharge.- 4 years (water years, 1912-15), 2,882 second-feet.

Extremes.- 1911-15: Maximum discharge observed, 16,900 second-feet June 13, 14, 1912 (gage height, 13.4 feet). Minimum discharge not determined; minimum period discharge estimated, 465 second-feet Dec. 5-31, 1914.

Gage.- Water-stage recorder at upper site installed Sept. 26, 1914, on right bank half a mile downstream from Sears Creek; used for the record Oct. 1, 1914, to Sept. 30, 1915, and continued in place for several years thereafter.
Oct. 12, 1911, to Sept. 30, 1914, at lower site, staff gage on right bank 135 feet upstream from ferry cable; read daily except during winter, occasional days at other times, Sept. 5-7, 10-21, 1912, and Aug. 19 to Sept. 13, 1913.

Remarks.- Records from upper and lower stations comparable; no appreciable tributaries between. Records good, except those estimated for winter and for other periods of no gage-height record, which are fair. Station ice-bound for long period each winter; discharge estimated from weather records and general comparison with flow of Green River at Green River, Utah. Diversions for irrigation above station.

Monthly summary of discharge of Green River at and near Bridgeport, Utah, 1911-15

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1911 a/	-	880	980	†30,378	60,250
November	950	-	822	†24,665	48,920
December	-	-	*580	17,980	35,660
January 1912	-	-	*550	17,050	33,820
February	-	-	*590	17,110	33,940
March	-	-	*774	24,000	47,600
April	1,900	-	1,628	†48,840	96,870
May	6,640	1,660	4,025	124,760	247,500
June	16,900	6,640	11,850	355,560	705,200
July	13,200	4,820	7,695	238,560	473,200
August	4,820	2,000	3,392	105,150	208,600
September	2,340	1,270	1,543	†46,290	91,810
Water year 1912	16,900	-	2,870	1,050,343	‡2,083,000
October 1912	1,710	1,190	1,331	41,250	81,820
November	-	-	*1,100	33,000	65,450
December	-	-	*700	21,700	43,040
Calendar year 1912	16,900	-	2,932	1,073,270	2,129,000
January 1913	-	-	*850	26,350	52,260
February	-	-	*800	22,400	44,430
March	-	-	*1,800	55,800	110,700
April	6,800	-	5,068	†152,040	301,600
May	10,900	3,750	6,328	196,170	389,100
June	14,000	8,080	10,950	328,460	651,500
July	12,000	4,030	6,723	208,420	413,400
August	4,600	-	2,717	†84,240	167,100
September	-	1,270	1,850	†55,500	110,100
Water year 1913	14,000	-	3,357	1,225,330	2,430,000
October 1913	2,220	1,270	1,856	57,540	114,100
November	1,530	-	1,154	†34,620	68,670
December	-	-	*750	23,250	46,120
Calendar year 1913	14,000	-	3,410	1,244,790	2,469,000
January 1914	-	-	*780	24,180	47,960
February	-	-	*1,020	28,560	56,650
March	3,750	-	1,972	†61,130	121,200
April	6,800	3,100	5,128	153,840	305,100
May	14,400	4,750	8,873	275,070	545,600
June	16,700	8,580	11,780	353,460	701,100
July	9,300	2,840	5,981	185,400	367,700
August	4,350	1,160	2,480	76,890	152,500
September	1,160	790	903	27,095	53,740
Water year 1914	16,700	-	3,564	1,301,035	2,580,000

a Discharge Oct. 1-11 estimated; record for full month and resulting water year not previously published.

Monthly summary of discharge of Green River at and near Bridgeport, Utah, 1911-15--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1914	-	-	1,260	b39,064	*77,480
November	-	-	841	b25,229	*50,040
December	-	-	479	b14,860	*29,470
Calendar year 1914	16,700	-	3,465	1,264,778	2,509,000
January 1915	-	-	*480	14,880	*29,510
February	-	-	494	†13,839	*27,450
March	1,850	500	950	†29,438	58,390
April	2,970	1,580	2,235	67,060	133,000
May	3,540	2,140	2,995	92,840	184,100
June	6,330	3,200	4,746	142,380	282,400
July	4,420	2,030	3,208	99,460	197,300
August	2,320	900	1,349	41,816	82,940
September	5,010	846	1,790	53,704	106,500
Water year 1915	6,330	-	1,739	634,570	1,259,000

b Discharge estimated for successive short periods interspersed by a few days of record.

Yearly discharge of Green River at and near Bridgeport, Utah, 1912-15

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1912	2,870	‡2,083,000	2,932	2,129,000
1913	3,357	2,430,000	3,410	2,469,000
1914	3,564	2,580,000	3,465	2,509,000
1915	1,739	1,259,000	-	-

YAMPA RIVER NEAR MAYBELL, COLO.

Location.- Lat. 40°30', long. 108°02', in sec. 2, T. 6 N., R. 95 W., at highway bridge 3 miles east of Maybell, since Oct. 30, 1936.
1904-12: In sec. 20, T. 7 N., R. 96 W., at Thornburgh Bridge, about 17 miles downstream from present station.
1916-36: At former Fraker Ford Bridge, 700 feet downstream from present station.

Drainage area.- 3,410 square miles.

Records available.- April to October, 1904 and 1905, June to November, 1910 and 1911, April to November, 1912, and April 1916 to September 1938.
Miscellaneous discharge measurements made in 1898 and 1900.

Average discharge.- 22 years (water years, 1917-38), 1,704 second-feet.

Extremes.- 1904-5, 1910-12, 1916-38: Maximum discharge observed, 17,900 second-feet May 19, 1917 (gage height, about 10.4 feet); minimum daily discharge observed, 2 second-feet July 17-19, 1934.

Gage.- Water-stage recorder at new highway bridge since Oct. 30, 1936.
Apr. 17, 1904, to Aug. 18, 1905, vertical staff gage on center pier, and Aug. 18 to Oct. 31, 1905, chain gage at Thornburgh Bridge. Gage read to tenths twice a day during open-water seasons.
June 12, 1910, to Nov. 30, 1911, chain gage, and April to November, 1912, vertical staff gage at Thornburgh Bridge. Gages apparently read to tenths twice a day during open-water seasons.
Apr. 24, 1916, to 1919, chain gage, and 1919 to Oct. 30, 1936, water-stage recorder at Fraker Ford Bridge. Chain gage read to quarter-tenths twice a day. Gage readings and operation of water-stage recorder suspended during frozen winter seasons.
Gage datum was maintained the same for the different gages at each bridge but there is no defined relation between elevations at the three different bridges and no elevations above sea level have been determined.

Cooperation.- Records collected in collaboration with the State engineer, 1910-12, 1916, and 1934-38, who also furnished entire record of daily discharge 1917-33.

Remarks.- Records good since 1916, winter estimates fair. Earlier records collected under less favorable conditions. Winter estimates computed on basis of comparison with related stations, weather records, and for most recent winters one or two discharge measurements. Records identical at the two sites used since 1916. Records a the site 17 miles downstream used 1904-12 are closely comparable. All of these records show discharge of Yampa River above Little Snake River which enters 37 miles downstream from present station. Diversions for irrigation above and below station.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1904 a/	5,570	-	2,860	†85,800	170,200
May	7,730	3,650	5,232	162,190	321,700
June	6,610	2,240	4,559	136,776	271,300
July	2,110	340	942	29,208	57,930
August	450	250	360	11,170	22,160
September	428	195	271	8,133	16,130
October	405	195	301	9,345	18,540
The period	7,730	-	2,068	442,622	878,000
April 1905	3,660	655	1,825	54,750	108,600
May	9,320	2,920	5,581	173,020	343,200
June	10,800	2,700	6,768	203,050	402,700
July	2,020	450	958	30,005	59,510
August	880	145	303	9,380	18,600
September	260	130	185	5,539	10,990
October	290	145	188	5,835	11,570
The period	10,800	130	2,250	481,579	955,200
June 1910 a/	-	985	2,690	†80,700	160,100
July	985	151	450	13,950	27,670
August	253	105	141	4,381	8,690
September	214	116	153	4,600	9,120
October	468	126	216	6,694	13,280
November	340	166	216	6,470	12,830
The period	-	105	638	116,795	231,700
June 1911 a/	5,860	2,400	4,450	†133,500	264,800
July	2,940	345	1,440	44,647	88,560
August	345	125	216	6,681	13,250
September	590	150	266	7,966	15,800
October	2,360	278	1,308	40,548	80,430
November	560	255	384	11,506	22,820
The period	5,660	125	1,338	244,848	485,700

a Record for full month not previously published.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1912	6,940	1,750	2,716	81,493	161,600
May	13,000	4,720	8,152	252,710	501,200
June	13,600	5,370	8,924	267,715	531,000
July	5,820	545	2,587	80,196	159,100
August	2,320	440	1,025	31,766	63,010
September	1,500	390	790	23,704	47,020
October	1,550	345	910	28,209	55,950
November	1,600	390	‡906	27,185	‡53,920
The period	13,600	345	3,250	792,978	1,573,000
April 24-30, 1916	8,610	3,980	6,680	46,760	92,750
May	11,500	3,620	6,335	196,390	389,500
June	7,890	3,280	5,758	172,750	342,600
July	2,960	568	1,288	39,962	79,260
August	1,140	362	690	21,388	42,420
September	852	329	413	12,378	24,550
October 1916	1,4[illegible]	345	751	23,268	46,150
November	-	-	*570	17,100	33,920
December	-	-	*480	14,880	29,510
January 1917	-	-	*385	11,935	23,670
February	-	-	*400	11,200	22,210
March	-	-	*680	21,080	41,810
April	10,200	760	3,582	107,450	213,100
May	17,300	3,740	10,020	310,560	616,000
June	15,300	8,540	12,810	384,170	762,000
July	11,400	1,550	4,487	139,100	275,900
August	1,920	421	744	23,066	45,750
September	500	356	412	12,368	24,530
Water year 1917	17,300	345	2,948	1,076,177	2,135,000
October 1917	470	277	337	10,436	20,700
November	430	250	364	10,920	21,660
December	400	290	327	10,138	20,110
Calendar year 1917	17,300	250	2,883	1,052,423	2,087,000
January 1918	338	296	312	9,660	19,160
February	360	340	354	9,900	19,640
March	2,100	380	934	28,965	57,450
April	4,200	1,410	2,332	69,950	138,700
May	7,420	1,800	5,880	182,270	361,500
June	10,100	4,350	7,392	221,760	439,900
July	5,930	930	2,271	70,390	139,600
August	810	280	425	13,175	26,130
September	630	240	410	12,314	24,420
Water year 1918	b10,100	b240	1,780	649,878	1,289,000
October 1918	1,050	390	563	17,460	34,630
November	606	420	496	14,881	29,520
December	-	-	*380	11,780	23,370
Calendar year 1918	10,100	240	1,815	662,505	1,314,000
January 1919	-	-	*320	9,920	19,680
February	-	-	*380	10,640	21,100
March	b2,980	-	*680	21,080	41,810
April	6,870	1,230	3,172	95,160	188,700
May	7,550	5,000	6,569	203,630	403,900
June	5,490	1,010	2,458	73,750	146,300
July	950	255	398	12,334	24,460
August	247	175	216	6,685	13,260
September	231	140	192	5,745	11,400
Water year 1919	7,550	140	1,323	483,065	958,100
October 1919	260	175	233	7,231	14,340
November	370	265	324	9,710	19,260
December	300	206	248	7,700	15,270
Calendar year 1919	7,550	140	1,270	463,585	919,500
January 1920	-	-	*244	7,564	15,000
February	-	-	*308	8,932	17,720
March	-	-	*393	12,183	24,160
April	1,330	490	1,047	31,424	62,330
May	15,800	1,970	11,010	341,180	676,700
June	14,300	5,040	9,127	273,800	543,100
July	4,900	950	2,072	64,240	127,400
August	830	440	586	18,154	36,010
September	435	335	385	11,540	22,890
Water year 1920	15,800	b175	2,168	793,658	1,574,000

b Not previously published.

Note.- Estimates of winter discharge 1916-17, 1918-19, and resulting yearly discharge not previously published.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	410	360	388	12,025	23,850
November	490	380	429	12,882	25,550
December c	510	350	440	13,653	27,080
Calendar year 1920	15,800	-	2,206	807,577	1,602,000
January 1921	-	-	*385	11,935	23,670
February	-	-	*500	14,000	27,770
March	3,140	724	1,579	48,954	97,100
April	5,190	1,280	2,499	74,980	148,700
May	14,400	2,410	9,125	282,880	561,100
June	16,600	4,440	11,510	345,290	684,900
July	4,100	830	1,985	61,550	122,100
August	1,080	420	682	21,147	41,940
September	400	296	315	9,450	18,740
Water year 1921	16,600	296	2,490	908,746	1,802,000
October 1921	301	287	292	9,047	17,940
November	310	287	298	8,940	17,730
December	-	-	*330	10,230	20,290
Calendar year 1921	16,600	287	2,461	898,403	1,782,000
January 1922	-	-	*300	9,300	18,450
February	-	-	*385	10,780	21,380
March	-	-	*760	23,560	46,730
April	3,790	940	1,641	49,226	97,640
May	10,600	4,110	6,950	215,450	427,300
June	8,780	2,540	5,856	175,670	348,400
July	2,550	360	1,247	38,652	76,670
August	500	260	359	11,125	22,070
September	310	135	186	5,580	11,070
Water year 1922	10,600	b135	1,555	567,560	1,126,000
October 1922	210	135	187	5,790	11,480
November	360	210	271	8,125	16,120
December	-	b210	*360	11,160	22,140
Calendar year 1922	10,600	135	1,546	564,418	1,119,000
January 1923	-	-	*320	9,920	19,680
February	-	-	*380	10,640	21,100
March	-	-	*430	13,330	26,440
April	7,320	b500	3,054	91,610	181,700
May	10,700	7,410	8,399	260,380	516,500
June	9,230	3,220	6,871	206,130	408,900
July	3,500	815	2,004	62,117	123,200
August	894	316	631	19,549	38,770
September	532	275	366	10,994	21,810
Water year 1923	10,700	b135	1,945	709,745	1,408,000
October 1923	520	342	421	13,062	25,910
November	401	b300	336	10,079	19,990
December	-	-	*250	7,750	15,370
Calendar year 1923	10,700	-	1,960	715,561	1,419,000
January 1924	-	-	*245	7,595	15,060
February	-	-	*270	7,830	15,530
March	-	-	*320	9,920	19,680
April	5,250	b400	2,513	75,380	149,500
May	7,050	2,010	5,166	160,150	317,700
June	7,140	1,940	4,857	145,710	289,000
July	1,800	314	893	27,681	54,900
August	308	153	256	7,947	15,760
September	276	134	222	6,659	13,210
Water year 1924	7,140	134	1,311	479,763	951,600
October 1924	579	284	412	12,783	25,350
November	446	372	407	12,197	24,190
December	b411	-	*360	11,160	22,140
Calendar year 1924	7,140	134	1,325	485,012	962,000
January 1925	-	-	*300	9,300	18,450
February	-	-	*320	8,960	17,770
March	b2,550	-	*680	21,080	41,810
April	5,110	1,620	3,195	95,840	190,100
May	6,460	3,700	5,265	163,230	323,800
June	4,580	2,020	3,504	105,120	208,500
July	2,090	451	1,093	33,879	67,200
August	594	360	417	12,927	25,640
September	1,080	398	536	16,083	31,900
Water year 1925	6,460	284	1,377	502,559	996,800

b Not previously published.
c Record for December 1920 not previously published.

Note.- Estimates of winter discharge 1920-21 and resulting yearly discharge not previously published. Yearly discharge for water years 1924-26 not previously published except total acre-feet.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	1,120	350	540	16,745	33,210
November	499	312	392	11,767	23,340
December	520	340	400	12,410	24,610
Calendar year 1925	6,460	-	1,390	507,341	1,006,000
January 1926	-	-	*385	11,935	23,670
February	-	-	*370	10,360	20,550
March	2,310	b400	880	27,291	54,130
April	7,020	560	3,808	114,248	226,600
May	8,350	3,270	6,389	198,050	392,800
June	7,400	1,300	4,156	124,670	247,300
July	2,310	370	937	29,035	57,590
August	576	277	369	11,431	22,670
September	270	189	227	6,816	d13,520
Water year 1926	8,350	189	1,575	574,758	d1,140,000
October 1926	340	277	306	9,477	18,800
November	340	289	305	9,153	18,150
December	370	b292	330	10,217	20,270
Calendar year 1926	8,350	189	1,542	562,683	1,116,000
January 1927	-	-	*320	9,920	19,680
February	-	-	*310	8,680	17,220
March	-	-	*590	18,290	36,280
April	7,840	b1,400	3,189	95,670	189,800
May	11,300	5,470	8,261	256,100	508,000
June	7,940	4,300	6,118	183,550	364,100
July	4,570	542	1,564	48,496	96,190
August	800	380	508	15,741	31,220
September	384	321	356	10,688	21,200
Water year 1927	11,300	277	1,852	675,982	1,341,000
October 1927	594	380	499	15,464	30,670
November	780	523	673	20,190	40,050
December	-	-	*540	16,740	33,200
Calendar year 1927	11,300	-	1,917	699,529	1,388,000
January 1928	-	-	*420	13,020	25,820
February	-	-	*520	15,080	29,910
March	-	-	*1,440	44,640	88,540
April	7,880	1,360	2,879	86,380	171,300
May	13,100	7,360	9,963	308,860	612,600
June	12,000	3,270	5,733	171,980	341,100
July	3,190	601	1,401	43,438	86,160
August	601	384	470	14,561	28,880
September	398	340	359	10,756	21,330
Water year 1928	13,100	340	2,080	761,109	1,510,000
October 1928	557	340	409	12,687	25,160
November	529	424	476	14,293	28,350
December	-	-	*380	11,780	23,370
Calendar year 1928	13,100	340	2,042	747,475	1,483,000
January 1929	-	-	*400	12,400	24,600
February	-	-	*400	11,200	22,210
March	-	-	*1,900	58,900	116,800
April	7,100	3,120	4,941	148,240	294,000
May	14,400	7,700	11,270	349,400	693,000
June	11,300	6,530	8,953	268,590	532,700
July	6,060	1,020	2,566	79,540	157,800
August	1,360	510	792	24,563	48,720
September	1,750	510	972	29,149	57,820
Water year 1929	14,400	340	2,797	1,020,742	2,025,000
October 1929	996	530	697	21,598	42,840
November	630	510	570	17,110	33,940
December	-	-	*480	14,880	29,510
Calendar year 1929	14,400	-	2,837	1,035,570	2,054,000
January 1930	-	-	*340	10,540	20,910
February	-	-	*380	10,640	21,100
March	1,530	480	785	24,324	48,250
April	7,420	700	4,349	130,473	258,800
May	7,510	2,650	4,396	136,270	270,300
June	7,800	1,400	4,022	120,670	239,300
July	1,200	388	569	17,646	35,000
August	2,030	393	623	19,323	38,330
September	710	365	437	13,106	26,000
Water year 1930	7,800	-	1,470	536,580	1,064,000

b Not previously published.
d Revised.

Note.- Yearly discharge for water years 1924-26 not previously published except total acre-feet. No yearly discharge previously published for 1927-36. Estimates of winter discharge 1928-29 not previously published.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	750	603	682	21,144	41,940
November	-	-	*691	20,730	41,120
December	-	-	*505	15,655	31,050
Calendar year 1930	7,800	-	1,481	540,521	1,072,000
January 1931	-	-	*325	10,075	19,980
February	-	-	*360	10,080	19,990
March	-	-	*740	22,940	45,500
April	4,110	1,630	2,750	82,490	163,600
May	6,180	2,570	3,864	119,780	237,600
June	4,920	975	2,974	89,231	177,000
July	1,010	183	468	14,510	28,780
August	493	108	193	5,990	11,880
September	721	52	152	4,556	9,040
Water year 1931	6,180	52	1,143	417,181	827,500
October 1931	308	280	300	9,308	18,460
November	-	-	*300	9,000	17,850
December	-	-	*247	7,657	15,190
Calendar year 1931	6,180	52	1,056	385,617	764,900
January 1932	-	-	*177	5,487	10,880
February	-	-	*195	5,655	11,220
March	1,860	-	*915	28,365	56,260
April	5,750	1,500	3,361	100,820	200,000
May	11,900	3,810	8,282	256,730	509,200
June	7,190	5,390	6,167	185,010	367,000
July	5,030	862	2,073	64,264	127,500
August	1,380	360	631	19,561	38,800
September	458	194	259	7,781	15,430
Water year 1932	11,900	-	1,912	699,638	1,388,000
October 1932	497	227	341	10,571	20,970
November	434	362	392	11,761	23,330
December	-	-	*245	7,595	15,060
Calendar year 1932	11,900	-	1,922	703,600	1,396,000
January 1933	-	-	*170	5,270	10,450
February	-	-	*300	8,400	16,660
March	-	-	*470	14,570	28,900
April	4,800	677	1,890	56,700	112,500
May	9,420	1,960	4,975	154,240	305,900
June	10,900	2,690	7,573	227,180	450,600
July	2,240	270	822	25,487	50,550
August	560	160	269	8,329	16,520
September	275	112	163	4,877	9,670
Water year 1933	10,900	112	1,466	534,980	1,061,000
October 1933	331	157	183	5,666	11,240
November	236	157	191	†5,731	11,370
December	-	-	*195	6,045	11,990
Calendar year 1933	10,900	112	1,431	522,495	1,036,000
January 1934	-	-	*115	3,565	7,070
February	-	-	*340	9,520	18,880
March	952	-	535	†16,594	32,910
April	2,930	561	1,567	47,024	93,270
May	3,700	1,410	2,450	75,940	150,600
June	2,230	63	548	16,444	32,620
July	55	2	20.4	†632	1,250
August	65	3	26.5	†820	1,630
September	59	15	27.8	†835	1,660
Water year 1934	3,700	2	517	188,816	374,500
October 1934	166	69	121	3,766	7,470
November	232	139	195	†5,856	11,620
December	-	-	*180	5,580	11,070
Calendar year 1934	3,700	2	511	186,576	370,000
January 1935	-	-	*262	8,122	16,110
February	-	-	*368	10,304	20,440
March	769	-	*455	14,105	27,980
April	2,040	622	1,173	35,198	69,810
May	8,210	1,420	3,886	120,460	238,900
June	9,430	3,300	6,336	190,070	377,000
July	3,100	372	1,174	36,388	72,170
August	524	128	283	8,788	17,430
September	288	91	139	4,158	8,250
Water year 1935	9,430	69	1,213	442,795	878,200

Note.- No yearly discharge previously published for 1927-36. Estimates of winter discharge 1930-36 not previously published.

Monthly summary of discharge of Yampa River near Maybell, Colo., 1904-5, 1910-12, 1916-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1935	250	135	169	†5,236	10,390
November	270	198	234	†7,010	13,900
December	-	-	*215	6,665	13,220
Calendar year 1935	9,430	91	1,223	446,504	885,600
January 1936	-	-	*240	7,440	14,760
February	-	-	*270	7,830	15,530
March	560	-	440	†13,640	27,050
April	9,590	500	4,285	†128,560	255,000
May	10,500	5,560	7,634	†236,650	469,400
June	8,280	1,740	4,204	126,130	250,200
July	1,710	327	730	22,623	44,870
August	773	142	352	10,916	21,650
September	156	120	136	4,091	8,110
Water year 1936	10,500	120	1,576	576,791	1,144,000
October 1936	285	146	210	6,509	12,910
November	295	115	201	†6,025	11,950
December	-	-	*180	5,580	11,070
Calendar year 1936	10,500	115	1,574	575,994	1,142,000
January 1937	-	-	*175	5,425	10,760
February	-	-	*260	7,280	14,440
March	-	-	*600	18,600	36,890
April	3,020	640	1,673	†50,202	99,570
May	10,000	2,200	6,436	199,510	395,700
June	7,970	1,660	4,098	122,940	243,800
July	3,200	490	1,208	37,446	74,270
August	524	162	288	8,927	17,710
September	328	106	177	5,320	10,550
Water year 1937	10,000	b106	1,298	473,764	939,600
October 1937	562	173	315	9,762	19,360
November	488	256	353	10,587	21,000
December	499	297	376	†11,670	23,150
Calendar year 1937	10,000	106	1,336	487,669	967,200
January 1938	390	325	357	†11,055	21,930
February	620	355	434	†12,165	24,130
March	1,100	580	818	†25,368	50,320
April	7,480	671	2,854	85,615	169,800
May	11,500	2,570	6,889	213,570	423,600
June	9,370	3,050	6,100	183,010	363,000
July	3,240	468	1,121	34,748	68,920
August	433	184	311	9,628	19,100
September	772	231	401	12,029	23,860
Water year 1938	11,500	173	1,696	619,207	1,228,000

b Not previously published.

Note.- No yearly discharge previously published for 1927-36. Estimates of winter discharge 1930-36 not previously published.

Yearly discharge of Yampa River near Maybell, Colo., 1917-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1917	2,948	2,135,000	2,883	2,087,000
1918	1,780	1,289,000	1,815	1,314,000
1919	1,323	958,100	1,270	919,500
1920	2,168	1,574,000	2,206	1,602,000
1921	2,490	1,802,000	2,461	1,782,000
1922	1,555	1,126,000	1,546	1,119,000
1923	1,945	1,408,000	1,960	1,419,000
1924	1,311	951,600	1,325	962,000
1925	1,377	996,800	1,390	1,006,000
1926	1,575	a1,140,000	1,542	1,116,000
1927	1,852	1,341,000	1,917	1,388,000
1928	2,080	1,510,000	2,042	1,483,000
1929	2,797	2,025,000	2,837	2,054,000
1930	1,470	1,064,000	1,481	1,072,000
1931	1,143	827,500	1,056	764,900
1932	1,912	1,388,000	1,922	1,396,000
1933	1,466	1,061,000	1,431	1,036,000
1934	517	374,500	511	370,000
1935	1,213	878,200	1,223	885,600
1936	1,576	1,144,000	1,574	1,142,000
1937	1,298	939,600	1,336	967,200
1938	1,696	1,228,000	-	-

a Revised.

LITTLE SNAKE RIVER NEAR LILY, COLO.[a]

Location.- Lat. 40°32', long. 108°25', in sec. 20, T. 7 N., R. 98 W., at highway bridge, 6 miles north of Lily, and 10 miles (revised) upstream from mouth.

Drainage area.- 3,730 square miles.

Records available.- June to August 1904, and October 1921 to September 1938.

Average discharge.- 17 years (water years, 1922-38), 647 second-feet.

Extremes.- 1904, 1922-38: Maximum discharge, 14,200 second-feet May 27, 1926 (gage height, 10.5 feet); no flow at times in 1924, 1930, 1931, 1934, and 1936.

Gage.- Water-stage recorder 300 feet downstream from highway bridge and 10 miles from mouth of river since November 1935.
May 1922 to November 1935, water-stage recorder at bridge supplemented by chain gage on bridge; datum raised 0.48 foot Oct. 1, 1925.
June to August 1904, staff gage on left bank at bridge; read once a day.

Cooperation.- Records 1934-38 collected in collaboration with office of State engineer who furnished complete records for open-water seasons 1922-33 and also winter estimates for water years 1924 and 1930.

Remarks.- Records of discharge at this station supplement records of Yampa River near Maybell to show discharge of Yampa River below Little Snake River and into Green River. For that reason, there have been included estimates of winter discharge which are of low accuracy in themselves but which contribute to yearly records of fairly good accuracy. Records for open-water seasons are good. Winter discharge in 1938 computed on basis of one discharge measurement, weather records, and records for Yampa River near Maybell; for 1922 and 1923, on basis of relation to discharge of Little Snake River at Dixon; and for other winters on more remote relationships. Diversions for irrigation above station.

Monthly summary of discharge of Little Snake River near Lily, Colo., 1904, 1921-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
June 9-30, 1904	2,140	760	1,370	30,145	59,790
July	715	63	306	9,496	18,840
August 1-14	153	43	64.1	898	1,780
October 1921	-	-	a114	-	*7,000
November	-	-	a84	-	*5,000
December	-	-	a98	-	*6,000
January 1922	-	-	a65	-	*4,000
February	-	-	a54	-	*3,000
March	-	-	a260	-	*16,000
April	-	-	a840	-	*50,000
May	5,650	2,020	3,684	114,200	226,500
June	3,980	346	2,199	65,962	130,800
July	306	40	108	3,334	6,610
August	114	20	44.1	1,366	2,710
September	28	14	19.4	583	1,160
Water year 1922	5,650	14	a634	-	458,800
October 1922	66	20	45.8	1,420	2,820
November	59	40	49.0	1,469	2,910
December	-	-	a65	-	*4,000
Calendar year 1922	5,650	14	a622	-	450,500
January 1923	-	-	a98	-	*6,000
February	-	-	a54	-	*3,000
March	-	-	a276	-	*17,000
April	-	-	a1,176	-	*70,000
May	4,900	2,150	3,119	96,690	191,800
June	3,580	694	2,279	68,369	135,600
July	598	24	263	8,149	16,160
August	122	6	54.7	1,697	3,370
September	146	89	136	4,082	8,100
Water year 1923	4,900	6	a636	-	460,800

a Computed from runoff in acre-feet.

Note.- Estimates of winter discharge for water years 1922-23 and resulting yearly discharge not previously published.

a Originally published as near Maybell, Colo., 1904.

Monthly summary of discharge of Little Snake River near Lily, Colo., 1904, 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	283	161	199	6,178	12,250
November	-	-	*120	3,600	7,140
December	-	-	*70	2,170	4,300
Calendar year 1923	4,900	6	a656	-	474,700
January 1924	-	-	*70	2,170	4,300
February	-	-	*90	2,610	5,180
March	-	-	*150	4,650	9,220
April	-	-	1,602	†48,047	95,300
May	3,580	1,750	2,849	88,320	175,200
June	2,940	186	1,208	36,252	71,900
July	186	0	92.1	2,855	5,660
August	0	0	0	0	0
September	116	0	8.7	262	520
Water year 1924	3,580	0	539	197,114	391,000
October 1924	130	24	60.5	1,876	3,720
November	-	-	a151	-	*9,000
December	-	-	a114	-	*7,000
Calendar year 1924	3,580	0	a533	-	387,000
January 1925	-	-	a81	-	*5,000
February	-	-	a72	-	*4,000
March	-	-	a358	-	*22,000
April	2,320	968	1,789	53,678	106,500
May	2,880	1,350	2,071	64,210	127,400
June	2,260	636	1,217	36,507	72,410
July	692	207	‡415	12,877	25,540
August	1,070	81	270	8,358	16,580
September	721	23	211	6,335	12,570
Water year 1925	2,880	-	a569	-	411,700
October 1925	1,210	23	385	11,933	23,670
November	-	-	a218	-	*13,000
December	-	-	a163	-	*10,000
Calendar year 1925	2,880	-	a606	-	438,700
January 1926	-	-	a146	-	*9,000
February	-	-	a144	-	*8,000
March	1,130	-	378	†11,715	23,240
April	4,560	730	2,104	63,110	125,200
May	8,950	1,620	3,565	110,500	219,200
June	4,560	278	1,715	51,450	102,000
July	520	24	173	5,374	10,660
August	71	12	26.7	829	1,640
September	350	12	96.8	2,905	5,760
Water year 1926	8,950	12	a762	-	551,400
October 1926	430	74	142	4,407	8,740
November	-	-	a84	-	*5,000
December	-	-	a81	-	*5,000
Calendar year 1926	8,950	12	a723	-	523,400
January 1927	-	-	a81	-	*5,000
February	-	-	a72	-	*4,000
March	-	-	a228	-	*14,000
April	3,140	1,380	1,836	†55,070	109,200
May	5,850	2,440	3,899	120,870	239,700
June	2,920	526	1,875	56,257	111,600
July	1,060	98	597	18,520	36,730
August	98	32	53.0	1,644	3,260
September	499	23	76.6	2,297	4,560
Water year 1927	5,850	-	a[illegible]	-	546,800
October 1927	500	140	189	5,868	11,640
November	960	230	363	10,891	21,600
December	-	-	a244	-	*15,000
Calendar year 1927	5,850	-	a796	-	576,300
January 1928	-	-	a179	-	*11,000
February	-	-	a191	-	*11,000
March	-	-	785	†24,330	48,260
April	3,090	620	1,468	44,025	87,320
May	5,890	2,670	4,230	131,140	260,100
June	4,210	740	2,067	62,000	123,000
July	845	7	115	3,559	7,060
August	33	7	12.5	386	766
September	49	7	16.1	482	956
Water year 1928	5,890	7	a823	-	597,700

a Computed from runoff in acre-feet.

Note.- Estimates of winter discharge for water years 1925-29 and resulting yearly discharge not previously published.

Monthly summary of discharge of Little Snake River near Lily, Colo., 1904, 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	1,630	27	303	9,405	18,650
November	390	127	166	4,984	9,890
December	-	-	*120	3,720	7,380
Calendar year 1928	5,890	7	a806	-	585,400
January 1929	-	-	*150	4,650	9,220
February	-	-	*150	4,200	8,330
March	-	-	*950	29,450	58,410
April	-	-	*2,000	60,000	119,000
May	7,280	3,060	5,539	171,720	340,600
June	5,550	1,420	4,116	123,490	244,900
July	1,320	183	581	18,003	35,710
August	415	59	167	5,178	10,270
September	492	50	260	7,807	15,480
Water year 1929	7,280	27	1,213	442,607	877,800
October 1929	302	230	255	7,910	15,690
November	198	90	147	4,409	8,750
December	-	-	*85	2,635	5,230
Calendar year 1929	7,280	50	1,204	439,452	871,600
January 1930	-	-	*70	2,170	4,300
February	-	-	*120	3,360	6,660
March	378	170	255	7,898	15,670
April	2,150	292	1,283	38,498	76,360
May	2,280	862	1,471	45,611	90,470
June	2,280	233	973	29,193	57,900
July	292	0	54.4	1,685	3,340
August	252	2	93.6	2,902	5,760
September	272	16	82.5	2,476	4,910
Water year 1930	2,280	0	408	148,747	295,000
October 1930	350	16	101	3,121	6,190
November	-	-	*25	750	1,490
December	-	-	*25	775	1,540
Calendar year 1930	2,280	0	379	138,439	274,600
January 1931	-	-	*67	2,077	4,120
February	-	-	*145	4,060	8,050
March	-	-	*620	19,220	38,120
April	2,490	1,660	2,074	62,220	123,400
May	2,990	1,550	2,268	70,320	139,500
June	2,610	330	1,367	41,000	81,320
July	680	215	455	14,090	27,950
August	470	0	84.9	2,631	5,220
September	98	0	15.4	463	918
Water year 1931	2,990	0	605	220,727	437,800
October 1931	395	18	176	5,446	10,800
November	445	46	260	7,794	15,460
December	-	-	*140	4,340	8,610
Calendar year 1931	2,990	0	640	233,661	463,500
January 1932	-	-	*205	6,355	12,600
February	-	-	*210	6,090	12,080
March	-	-	*1,135	35,185	69,790
April	3,650	1,550	2,344	70,330	139,500
May	7,100	2,240	4,505	139,640	277,000
June	3,650	780	2,919	87,580	173,700
July	1,550	60	529	16,398	32,520
August	178	5	56.0	1,737	3,450
September	202	14	42.6	1,278	2,530
Water year 1932	7,100	5	1,044	382,173	758,000
October 1932	203	50	136	4,205	8,340
November	238	154	182	5,448	10,810
December	-	-	90	2,783	5,530
Calendar year 1932	7,100	5	1,030	377,034	747,800
January 1933	-	-	a16	-	*1,000
February	-	-	a18	-	*1,000
March	-	-	a390	-	*24,000
April	3,380	469	1,116	33,489	66,420
May	5,670	1,110	3,056	94,730	187,900
June	4,770	1,210	3,642	109,250	216,700
July	1,020	28	254	7,860	15,590
August	22	6	10.1	314	623
September	13	2	3.3	99	196
Water year 1933	5,670	2	a743	-	538,100

a Computed from runoff in acre-feet.

Note.- Estimates of winter discharge for water years 1925-29 and 1931-37, and yearly discharge 1925-37, not previously published.

Monthly summary of discharge of Little Snake River near Lily, Colo., 1904, 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	-	-	*1	31	61
November	-	-	a34	-	*2,000
December	-	-	a65	-	*4,000
Calendar year 1933	5,670	-	a718	-	519,500
January 1934	-	-	a16	-	*1,000
February	-	-	a18	-	*1,000
March	276	-	200	†6,201	12,300
April	865	-	465	†13,956	27,680
May	736	143	477	14,786	29,330
June	132	2	36.7	†1,102	2,190
July	1	0	.3	†9	18
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1934	865	0	a110	-	79,580
October 1934	0	0	0	0	0
November	0	0	0	0	0
December	-	-	a33	-	*2,000
Calendar year 1934	865	0	a104	-	75,520
January 1935	-	-	a65	-	*4,000
February	-	-	a36	-	*2,000
March	-	-	a179	-	*11,000
April	1,030	177	397	11,896	23,600
May	3,050	456	1,431	44,370	88,010
June	2,830	472	1,666	49,975	99,120
July	494	3	114	3,533	7,010
August	220	2	27.9	864	1,710
September	795	3	54.8	†1,643	3,260
Water year 1935	3,050	0	a334	-	241,700
October 1935	9.0	.9	2.1	63.9	127
November	110	10	58.7	†1,760	3,490
December	-	-	a130	-	*8,000
Calendar year 1935	3,050	.9	a347	-	251,300
January 1936	-	-	a98	-	*6,000
February	-	-	a108	-	*6,000
March	-	-	157	†4,862	9,640
April	3,090	115	1,233	36,978	73,340
May	4,030	1,870	2,824	87,550	173,700
June	2,180	243	958	28,728	56,980
July	226	6.0	64.8	2,010.0	3,990
August	2,450	7.0	237	7,342.6	14,560
September	8.8	0	2.5	76.2	151
Water year 1936	4,030	0	a490	-	356,000
October 1936	111	8.6	58.9	1,826.6	3,620
November	353	41	105	3,154	6,260
December	-	-	a49	-	*3,000
Calendar year 1936	4,030	0	a492	-	357,200
January 1937	-	-	a49	-	*3,000
February	-	-	a18	-	*1,000
March	-	-	a211	-	*13,000
April	2,100	444	1,175	35,248	69,910
May	5,080	1,700	3,394	105,200	208,700
June	3,850	854	2,052	61,574	122,100
July	2,900	100	732	22,687	45,000
August	637	14	81.7	2,532	5,020
September	565	22	103	3,081	6,110
Water year 1937	5,080	-	a672	-	486,700
October 1937	125	29	71.3	2,210	4,380
November	277	77	114	3,424	6,790
December	130	85	111	3,450	6,840
Calendar year 1937	5,050	-	a679	-	491,800
January 1938	140	110	128	3,958	7,850
February	-	-	*155	4,340	8,610
March	-	-	*320	9,920	19,680
April	3,370	320	1,197	35,906	71,220
May	7,950	1,150	3,391	105,130	208,500
June	4,140	706	2,059	61,780	122,500
July	608	42	184	5,698	11,300
August	212	20	42.4	1,315	2,610
September	1,580	29	171	5,135	10,190
Water year 1938	7,950	20	664	242,266	480,500

a Computed from runoff in acre-feet.

Note.- Estimates of winter discharge for water years 1931-37 and resulting yearly discharge not previously published.

Yearly discharge of Little Snake River near Lily, Colo., 1922-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1922	a634	458,800	a622	450,500
1923	a636	460,800	a656	474,700
1924	539	391,000	a533	387,000
1925	a569	411,700	a606	438,700
1926	a762	551,400	a723	523,400
1927	a755	546,800	a796	576,300
1928	a823	597,700	a806	585,400
1929	1,213	877,800	1,204	871,600
1930	408	295,000	379	274,600
1931	605	437,800	640	463,500
1932	1,044	758,000	1,030	747,800
1933	a743	538,100	a718	519,500
1934	a110	79,580	a104	75,520
1935	a334	241,700	a347	251,300
1936	a490	356,000	a492	357,200
1937	a672	486,700	a679	491,800
1938	664	480,500	-	-

a Computed from runoff in acre-feet.

GREEN RIVER AT JENSEN, UTAH [a]

Location.- In sec. 21, T. 5 S., R. 23 E., at highway bridge at Jensen, 2½ miles upstream from Ashley Creek, and 12 miles southeast of Vernal.

Drainage area.- 26,100 square miles.

Records available.- October 1903 to December 1904, March to September 1906, July to October 1914, and August to December 1915.

Extremes.- 1903-4, 1906, 1914, 1915: Maximum discharge observed during periods of record, 32,100 second-feet May 29, 1904 (gage height, 11.80 feet); minimum, 236 second-feet (revised) Dec. 6, 1904 (gage height, 0.93 foot).

Gage.- Nov. 7, 1903, to Sept. 30, 1906, vertical staff gage on right bank, 300 feet downstream from Billings ferry at Jensen, and not far from site of later highway bridge; read twice daily to hundredths during periods of record. Relation of datum to that of later gage not known.

June 30, 1914, to Dec. 15, 1915, chain gage near right bank, on downstream side of highway bridge; read twice daily to hundredths. Zero of gage was 4,715.90 feet above mean sea level (general adjustment of 1929). This gage remained in place several years after 1915 and was read occasionally.

Remarks.- Records fair. Gage not read during winter. Discharge estimated by comparison with flow at related stations Oct. 1 to Nov. 6, 1903, and January, February, and Dec. 21-31, 1904. Diversions for irrigation above station.

Monthly summary of discharge of Green River at Jensen, Utah, 1903-4, 1906, 1914-15

(* Estimated; † Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1903	-	-	*1,600	49,600	98,380
November	1,560	852	1,333	†40,003	79,340
December	2,830	1,390	1,726	53,504	106,100
January 1904	-	-	*1,800	55,800	110,700
February	(a)	-	*2,000	58,000	115,000
March	6,290	b2,270	3,547	109,950	218,100
April	12,200	b2,820	7,583	227,494	451,200
May	32,100	b12,400	20,400	632,330	1,254,000
June	26,200	b13,700	23,000	690,040	1,369,000
July	13,200	b5,400	9,485	294,044	583,200
August	4,850	b2,240	3,103	96,188	190,800
September	2,350	b670	1,214	36,435	72,270
Water year 1904	32,100	670	6,403	2,343,388	4,648,000
October 1904	1,800	670	1,041	32,282	64,030
November	1,080	586	745	22,340	44,310
December	(a)	236	625	†19,365	38,410
Calendar year 1904	32,100	236	6,214	2,274,268	4,511,000
March 13-31, 1906	16,200	1,990	7,339	139,450	276,600
April	14,700	3,970	8,070	242,110	480,200
May	29,600	8,850	19,410	601,650	1,193,000
June	30,200	9,670	20,410	612,370	1,215,000
July	12,300	5,160	9,228	286,060	567,400
August	5,870	2,520	3,850	119,360	236,700
September	4,420	2,240	3,075	92,260	183,000
July 1914	11,200	4,570	7,729	239,600	475,200
August	5,330	1,930	3,349	103,830	205,900
September	1,930	1,280	1,457	43,720	86,720
October 1-17, 1914	3,350	1,280	2,356	40,060	79,460
August 1915	2,580	1,120	1,546	47,920	95,050
September	6,780	1,080	2,148	64,430	127,800
October 1915	4,020	1,420	2,044	63,380	125,700
November	1,690	749	1,282	38,461	76,290
December 1-15	1,400	910	1,151	17,266	34,250

a Previously published figure discarded.
b Revised; supersedes erroneous figure published in Water-Supply Paper 618.

Note.- Records for full months of October, November, 1903, December 1904, and resulting yearly discharge not previously published.

Yearly discharge of Green River at Jensen, Utah, 1904

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1904	6,403	4,648,000	6,214	4,511,000

a Published as near Vernal, Utah, 1903.

DUCHESNE RIVER AT MYTON, UTAH [a]

Location.- Lat. 40°12', long. 110°03', in NW¼ sec. 25, T. 3 S., R. 2 W., Uinta special base and meridian, at highway bridge at Myton, 3 miles downstream from Lake Fork, 20 miles upstream from Uinta River, and 40 miles upstream from mouth, since 1910.
1899-1909: At former highway bridge half a mile downstream, known as Price road bridge.

Drainage area.- 2,750 square miles.

Records available.- October 1899 to September 1938 (fragmentary 1903-11).

Average discharge.- 30 years (water years, 1900-2, 1912-38), 652 second-feet.

Extremes.- 1899-1938: Maximum discharge observed, 12,800 second-feet June 10, 1922, (gage height, 7.94 feet) from rating curve extended above 8,000 second-feet; minimum daily mean discharge, 1 second-foot on several days in July, August, September, 1931, and August, September, 1934.

Gage.- Water-stage recorder on left bank a few feet downstream from single-span steel highway bridge at Myton, since Oct. 14, 1933.
Aug. 6, 1910, to Oct. 14, 1933, chain gage at same datum, on upstream side of highway bridge near left bank; read generally to hundredths once or twice a day with occasional omissions.
Aug. 9, 1909, to Oct. 22, 1910, chain gage on right bank a quarter of a mile downstream; read once or twice daily. Aug. 6 to Oct. 22, 1910, both this and the later gage were read, and the later gage found to read approximately 2.7 feet less, at that stage of the river.
July 9 to Aug. 9, 1909, chain gage at same datum and 100 feet downstream from gage used after August 9.
Oct. 26, 1899, to June 6, 1909, staff gages and a chain gage, at two-span wooden bridge on crib piers, known as Price road bridge, half a mile downstream from present bridge built in 1910. Principal gages were vertical staff on downstream side of center pier 1899-1902, vertical staff on left abutment pier 1903-6, and chain gage on bridge 1907-9, all gages at practically same datum, said to be 4,996.09 feet above mean sea level, but independent of later gages.

Remarks.- Records after 1910 good; earlier records fair; estimates of winter discharge, and for other periods without gage heights, fair. Considerable ice at station December to March during most winters and occasional omission of gage reading at other times. For such periods, discharge estimated or computed from discharge measurements, weather records, and comparison with flow at related stations on river and tributaries upstream. Diversions for irrigation above station. Regulation by storage in irrigation reservoirs on Strawberry River and Lake Fork. Storage in Strawberry Valley Reservoir (capacity, 250,000 acre-feet) begun July 14, 1913; water diverted through tunnel to Spanish Fork for irrigation in Great Salt Lake Basin; only excess flood waters pass this reservoir and enter Duchesne River. Minor diversions from Strawberry River Basin above reservoir to Daniels Canyon for irrigation in Great Salt Lake Basin. This record, supplemented by record of Uinta River near Fort Duchesne shows practically the contribution of Duchesne River to Green River.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938
(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1899	-	-	*403	12,493	24,780
November	-	-	*398	11,940	23,680
December	-	-	a323	†10,000	b19,830
January 1900	-	-	b*340	10,540	b20,910
February	-	-	b*340	9,520	b18,880
March	700	315	‡390	†12,080	‡23,960
April	860	350	467	14,000	27,770
May	5,880	630	2,327	72,150	143,100
June	4,440	600	1,702	51,070	101,300
July	570	275	377	11,683	23,170
August	350	235	271	8,405	16,670
September	450	245	296	8,869	17,590
Water year 1900	5,880	-	* b638	232,750	b461,600
October 1900	330	300	313	9,705	19,250
November	330	288	305	9,138	18,120
December	-	-	b320	†9,935	b19,710
Calendar year 1900	5,880	-	622	227,095	450,400
January 1901	-	-	*280	8,680	17,220
February	-	-	*280	7,840	15,550
March	-	278	‡299	†9,256	‡18,360
April	1,190	247	498	14,929	29,610
May	6,680	1,190	3,169	98,245	194,900
June	2,860	870	1,485	44,546	88,360
July	‡870	408	597	18,493	36,680
August	‡910	313	453	14,028	27,820
September	408	262	307	9,206	18,260
Water year 1901	6,680	-	b696	254,001	b503,800

a Revised; based on revised daily discharge as follows: Dec. 1-2, 330 sec.-ft.; Dec. 17, 285 sec.-ft.; Dec. 22-25, 350 sec.-ft.; and Dec. 26-31, 300 sec.-ft.
b Revised.

a Published as at Price road bridge, Utah, 1899-1902.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1901	439	278	322	9,969	19,770
November	355	278	316	9,489	18,820
December	-	-	#300	9,300	18,450
Calendar year 1901	6,680	-	‡696	253,981	503,800
January 1902	-	-	#280	8,680	17,220
February	-	-	#280	7,840	15,550
March	-	-	‡300	9,300	‡18,450
April	1,360	304	656	19,680	39,030
May	5,820	820	1,969	61,029	121,000
June	4,900	892	2,239	67,172	133,200
July	892	292	555	17,211	34,140
August	410	240	273	8,472	16,800
September	374	184	258	7,746	15,360
Water year 1902	5,820	-	‡646	235,888	‡467,800
October 1902	320	280	297	9,220	18,290
November	332	312	322	9,656	19,150
December	-	-	#300	9,300	18,450
Calendar year 1902	5,820	-	‡645	235,306	466,600
April 1903	900	320	‡455	†13,645	‡27,060
May	2,300	665	1,332	41,300	81,920
June	4,750	1,580	‡3,250	†97,510	193,400
July	1,460	570	912	28,265	56,060
August	535	296	375	11,611	23,030
September	500	275	329	9,865	19,570
October 1903	605	319	383	11,863	23,530
November	431	296	353	10,596	21,020
December 1-5	479	425	415	2,076	4,120
March 10-31, 1904	406	308	335	7,380	14,640
April	1,230	323	691	20,730	41,120
May	6,080	1,100	2,856	88,551	175,600
June	4,880	1,890	3,453	103,603	205,500
July	1,830	615	1,031	31,962	63,400
August	2,080	423	623	19,317	38,310
September	581	269	369	11,058	21,930
October 1904	484	355	401	12,417	24,630
November	411	313	346	10,390	20,610
December 1-6	394	313	348	2,086	4,140
March 13-31, 1905	355	274	313	5,944	11,790
April	840	274	448	13,433	26,640
May	2,260	643	1,217	37,734	74,840
June	5,150	1,300	3,095	92,860	184,200
July 1-22	2,150	484	902	19,843	39,360
August	-	-	-	-	-
September 24-30	920	219	455	3,188	6,320
October 1905	484	313	355	11,006	21,830
November	366	313	319	†9,557	‡18,960
April 1906	1,770	423	893	26,797	‡53,150
May	4,970	1,440	3,324	103,030	204,400
June	7,320	2,800	4,524	135,720	269,200
July 1-10	3,850	2,720	3,144	31,440	62,360
April 10-30, 1907	2,650	794	2,059	43,236	85,760
May	6,000	1,900	3,285	101,850	202,000
June	7,610	3,400	5,393	161,780	320,900
July	9,560	2,470	5,677	175,990	349,100
August	2,440	1,120	1,556	48,250	95,700
September	1,400	670	874	26,231	52,030
October 1907	792	670	693	21,494	42,630
November	670	525	564	16,919	33,560
December 1-15	595	525	551	8,260	16,380
March 18-31, 1908	620	430	490	6,860	13,610
April	1,550	430	813	24,403	48,400
May	1,490	815	1,158	35,910	71,230
June	4,670	845	2,397	71,905	142,600
July	2,000	668	1,225	37,983	75,340
August	2,440	480	869	26,932	53,420
September	850	422	539	16,169	32,070
October 1908	770	602	682	21,148	41,950
November	668	450	522	15,647	31,040
December	-	-	#527	16,337	32,390
April 1909	1,480	562	841	25,240	50,060
May	4,430	1,080	2,846	88,240	175,000
June 1-6 c/	8,080	3,500	5,742	34,450	68,330
July 10-31	3,270	2,100	2,411	53,040	105,200
August	1,960	1,200	1,491	46,230	91,700
September	3,270	928	1,519	45,558	90,360

c Flood on June 6 cut new channel around bridge and away from gage.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1909	980	775	866	26,843	53,240
November	775	605	731	21,940	43,520
December	645	-	637	†19,750	39,170
March 12-31, 1910	2,240	875	1,136	22,718	45,060
April	4,540	980	2,106	63,180	125,300
May	5,440	2,700	3,691	114,430	227,000
June	4,840	875	1,966	58,995	117,000
July	1,090	385	588	18,243	36,180
August	685	285	384	11,917	23,640
September	1,150	285	501	15,022	29,800
October 1910	935	425	533	16,521	32,770
November	480	455	458	13,755	27,280
July 25-31, 1911	605	402	487	3,406	6,760
August	382	193	246	7,628	15,130
September	770	193	255	7,658	15,190
October 1911	605	345	423	13,099	25,980
November	444	262	360	10,799	21,420
December	402	247	343	10,639	21,100
January 1912	-	-	*300	9,300	18,450
February	-	-	*280	8,120	16,110
March	474	-	354	†10,961	21,740
April	550	362	423	12,687	25,160
May	4,020	404	1,469	45,533	90,310
June	6,320	2,700	4,154	124,620	247,200
July	2,960	536	1,087	33,695	66,830
August	598	184	313	†9,715	19,270
September	464	222	299	8,965	17,780
Water year 1912	6,320	184	815	298,133	591,400
October 1912	399	292	489	15,145	30,040
November	586	358	456	13,670	27,110
December	418	222	338	†10,492	20,810
Calendar year 1912	6,320	184	828	302,903	600,800
January 1913	-	-	*280	8,680	17,220
February	-	-	*300	8,400	16,660
March	1,300	-	408	†12,648	25,090
April	1,110	428	662	19,846	39,360
May	3,880	767	2,023	62,717	124,400
June	4,160	732	1,656	49,684	98,550
July	1,790	336	745	23,101	45,820
August	404	184	253	7,839	15,550
September	1,530	328	657	19,724	39,120
Water year 1913	4,160	184	‡690	251,946	499,700
October 1913	732	418	525	16,273	32,280
November	598	328	445	13,354	26,490
December	-	-	321	†9,949	19,730
Calendar year 1913	4,160	184	691	252,215	500,300
January 1914	-	-	‡395	†12,250	24,300
February	-	-	*380	10,640	21,100
March	732	-	‡491	†15,230	30,210
April	1,410	480	947	28,418	56,370
May	5,940	1,030	3,345	103,700	205,700
June	6,240	1,660	3,778	113,350	224,800
July	1,660	532	1,028	31,868	63,210
August	710	244	397	12,302	24,400
September	336	244	292	8,765	17,390
Water year 1914	6,240	244	1,030	376,099	746,000
October 1914	710	442	479	14,850	29,450
November	470	253	379	11,364	22,540
December	442	-	317	†9,821	19,480
Calendar year 1914	6,240	-	1,021	372,558	739,000
January 1915	-	-	*310	9,610	19,060
February	-	-	*320	8,960	17,770
March	448	-	356	†11,038	21,890
April	1,100	145	554	16,631	32,990
May	2,020	523	1,093	33,886	67,210
June	3,770	1,280	2,509	75,250	149,300
July	1,250	164	507	15,730	31,200
August	172	104	133	4,120	8,170
September	978	104	379	11,368	22,550
Water year 1915	3,770	104	610	222,628	441,600

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	710	335	471	14,590	28,940
November	530	260	373	11,190	22,200
December	500	285	‡376	11,665	23,140
Calendar year 1915	3,770	104	614	224,038	444,400
January 1916	-	-	*370	11,470	22,750
February	-	-	*400	11,600	23,010
March	-	-	879	†27,255	54,060
April	2,200	620	1,042	31,260	62,000
May	3,540	1,430	2,151	66,695	132,300
June	4,560	1,130	2,874	86,230	171,000
July	995	385	627	19,440	38,560
August	955	200	459	14,235	28,230
September	‡360	200	269	8,080	16,030
Water year 1916	4,560	200	857	313,710	622,200
October 1916	1,410	442	659	20,439	40,540
November	502	(d)	410	†12,291	24,380
December	-	-	278	e8,630	17,120
Calendar year 1916	4,560	200	868	317,625	630,000
January 1917	-	-	*245	7,595	15,060
February	-	-	*565	15,820	31,380
March	(d)	-	852	†26,409	52,380
April	1,500	442	800	23,998	47,600
May	2,820	794	1,708	52,949	105,000
June	9,690	2,210	5,767	173,010	343,200
July	6,180	754	2,372	73,530	145,800
August	1,320	336	528	16,359	32,450
September	1,100	346	525	15,750	31,240
Water year 1917	9,690	-	1,224	446,780	886,200
October 1917	567	431	475	14,719	29,190
November	567	442	497	14,920	29,590
December	638	-	466	†14,461	28,680
Calendar year 1917	9,690	-	1,232	449,520	891,600
January 1918	-	-	331	e10,275	20,380
February	-	-	*390	10,920	21,660
March	508	293	398	12,341	24,480
April	508	270	341	10,229	20,290
May	1,420	317	830	25,722	51,020
June	4,590	844	2,735	82,047	162,700
July	1,710	170	680	21,090	41,830
August	250	68	129	†3,992	7,920
September	1,020	56	280	8,413	16,690
Water year 1918	4,590	56	628	229,129	454,400
October 1918	1,010	293	537	16,648	33,020
November	606	327	456	13,668	27,110
December	640	-	415	†12,857	25,500
Calendar year 1918	4,590	56	625	228,202	452,600
January 1919	-	-	‡260	e8,062	‡15,990
February	-	-	*350	9,800	19,440
March	1,030	-	632	†19,601	38,880
April	1,110	420	650	19,506	38,690
May	3,380	1,010	2,056	63,740	126,400
June	1,750	200	770	23,087	45,790
July	310	2	109	3,373	6,690
August	855	11	139	4,308	8,540
September	815	34	292	8,754	17,360
Water year 1919	3,380	11	‡557	203,404	403,400
October 1919	450	325	372	11,521	22,850
November	550	-	379	†11,384	22,580
December	-	-	303	e9,404	18,650
Calendar year 1919	3,380	11	528	192,540	381,900
January 1920	-	-	*290	8,990	17,830
February	-	-	*375	10,875	21,670
March	-	-	522	†16,171	32,070
April	622	390	456	13,677	27,130
May	5,500	390	2,213	68,588	136,000
June	5,570	1,630	3,288	98,650	195,700
July	1,430	335	653	20,247	40,160
August	1,340	285	545	16,885	33,490
September	420	240	322	9,649	19,140
Water year 1920	5,570	240	809	296,041	587,200

d Previously published figure discarded.
e Discharge estimated for successive short periods.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	645	285	427	13,225	26,230
November	645	-	497	†14,922	29,600
December	-	-	*350	10,850	21,520
Calendar year 1920	5,570	240	827	302,729	600,400
January 1921	-	-	*325	10,075	19,980
February	-	-	486	e13,600	26,980
March	1,340	-	688	†21,332	42,310
April	718	386	559	16,757	33,240
May	4,450	703	1,925	59,685	118,400
June	9,350	3,900	6,154	184,620	366,200
July	3,560	640	1,504	46,612	92,450
August	1,610	405	695	21,541	42,730
September	-	304	551	†16,544	32,810
Water year 1921	9,350	285	1,177	429,763	852,400
October 1921	578	282	360	11,173	22,160
November	486	304	352	10,558	20,940
December	695	410	518	16,058	31,850
Calendar year 1921	9,350	282	1,174	428,555	850,000
January 1922	540	-	400	†12,406	24,610
February	-	-	*425	11,900	23,600
March	-	-	660	†20,452	40,570
April	1,280	365	692	20,757	41,170
May	7,040	1,240	3,941	122,170	242,300
June	8,770	3,120	6,356	190,690	378,200
July	2,410	566	1,006	31,194	61,870
August	1,150	416	619	19,198	38,080
September	840	328	481	14,419	28,600
Water year 1922	8,770	282	1,318	480,975	954,000
October 1922	587	290	408	12,642	25,080
November	706	385	542	16,269	32,270
December	601	-	508	†15,753	31,250
Calendar year 1922	8,770	290	1,337	487,850	967,600
January 1923	-	-	*425	13,175	26,130
February	-	-	*400	11,200	22,210
March	723	-	468	†14,523	28,810
April	926	601	755	22,640	44,910
May	5,440	854	2,868	88,904	176,300
June	7,120	2,190	3,681	110,430	219,000
July	2,950	615	1,489	46,161	91,560
August	806	323	527	16,338	32,410
September	580	258	379	11,374	22,560
Water year 1923	7,120	258	1,039	379,409	752,500
October 1923	783	469	579	17,946	35,600
November	601	450	502	15,067	29,880
December	-	-	443	†13,733	27,240
Calendar year 1923	7,120	258	1,045	381,491	756,600
January 1924	-	-	*400	12,400	24,600
February	-	-	*480	13,915	27,600
March	587	362	433	13,430	26,640
April	755	362	528	15,826	31,390
May	3,030	374	1,351	41,876	83,060
June	896	42	407	12,209	24,220
July	193	8	56.8	1,762	3,490
August	161	8	27.6	855	1,700
September	170	6	73.5	2,204	4,370
Water year 1924	3,030	6	440	161,223	319,800
October 1924	208	124	178	5,508	10,920
November	362	213	268	8,053	15,970
December	351	-	276	†8,562	16,980
Calendar year 1924	3,030	6	373	136,600	270,900
January 1925	-	-	262	e8,127	16,120
February	-	-	*280	7,840	15,550
March	312	222	278	†8,630	17,120
April	274	157	251	7,527	14,930
May	2,250	165	1,157	35,880	71,170
June	-	-	1,051	†31,529	62,540
July	-	-	387	†11,989	23,780
August	-	-	233	†7,209	14,300
September	546	222	346	10,371	20,570
Water year 1925	2,250	-	414	151,225	300,000

e Discharge estimated for successive short periods.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	922	241	430	13,338	26,460
November	394	309	347	10,404	20,640
December	443	285	343	10,644	21,110
Calendar year 1925	2,250	-	448	163,488	324,300
January 1926	348	-	298	†9,232	18,310
February	-	-	422	e11,810	23,420
March	-	267	334	†10,368	20,560
April	874	292	498	14,928	29,610
May	3,570	541	1,490	46,189	91,610
June	3,000	150	854	25,609	50,790
July	426	26	142	4,409	8,750
August	1,120	16	170	5,256	10,430
September	107	12	43.8	1,316	2,610
Water year 1926	3,570	12	448	163,502	324,300
October 1926	136	90	118	3,664	7,270
November	234	126	173	5,195	10,300
December	280	-	231	†7,157	14,200
Calendar year 1926	3,570	12	398	145,132	287,900
January 1927	-	-	*250	7,750	15,370
February	-	-	273	e7,632	15,140
March	504	-	375	†11,637	23,080
April	914	-	380	†11,400	22,610
May	3,640	726	1,591	49,334	97,850
June	3,490	1,100	2,149	64,470	127,900
July	2,350	238	747	23,160	45,940
August	497	140	218	6,751	13,390
September	5,700	230	1,597	47,920	95,050
Water year 1927	5,700	90	674	246,070	488,100
October 1927	1,100	568	761	23,590	46,790
November	1,150	412	522	15,666	31,070
December	504	280	383	†11,871	23,550
Calendar year 1927	5,700	140	770	281,181	557,700
January 1928	-	-	*325	10,075	19,980
February	384	-	334	†9,680	19,200
March	970	280	455	14,092	27,950
April	1,100	234	390	11,706	23,220
May	4,780	1,350	2,506	77,690	154,100
June	3,650	482	1,337	40,123	79,580
July	450	84	187	5,809	11,520
August	232	84	144	4,474	8,870
September	124	84	96.3	2,890	5,730
Water year 1928	4,780	84	622	227,666	451,600
October 1928	1,100	110	317	9,814	19,470
November	400	254	324	9,706	19,250
December	454	254	309	†9,577	19,000
Calendar year 1928	4,780	84	562	205,636	407,900
January 1929	-	-	*325	10,075	19,980
February	-	-	*325	9,100	18,050
March	-	-	400	†12,389	24,570
April	572	254	403	12,078	23,960
May	2,940	482	1,286	39,857	79,060
June	3,750	1,250	2,139	64,180	127,300
July	1,390	402	580	17,980	35,660
August	1,340	180	374	11,598	23,000
September	1,730	278	480	14,390	28,540
Water year 1929	3,750	110	605	220,744	437,800
October 1929	402	255	284	8,793	17,440
November	457	154	302	9,068	17,990
December	402	255	290	†8,995	17,840
Calendar year 1929	3,750	154	599	218,503	433,400
January 1930	-	-	*300	9,300	18,450
February	-	-	*325	9,100	18,050
March	376	212	291	9,013	17,880
April	940	255	493	14,797	29,350
May	3,400	402	958	29,710	58,930
June	4,270	350	1,886	56,571	112,200
July	301	46	161	4,987	9,890
August	900	172	399	12,359	24,510
September	457	104	235	7,040	13,960
Water year 1930	4,270	46	492	179,733	356,500

e Discharge estimated for successive short periods.

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	452	335	379	11,745	23,300
November	402	-	308	†9,244	18,340
December	-	-	*290	8,990	17,830
Calendar year 1930	4,270	46	501	182,856	362,700
January 1931	-	-	*280	8,680	17,220
February	-	-	*280	7,840	15,550
March	-	-	298	†9,234	18,320
April	340	161	247	7,413	14,700
May	1,180	180	451	13,990	27,750
June	595	41	245	7,355	14,590
July	844	1	33.2	1,028	2,040
August	92	1	10.9	339	672
September	128	1	6.4	193	383
Water year 1931	1,180	1	236	86,051	170,700
October 1931	131	4	38.0	1,179	2,340
November	300	122	178	5,341	10,590
December	-	-	*300	9,300	18,450
Calendar year 1931	1,180	1	197	71,892	142,600
January 1932	-	-	*330	10,230	20,290
February	-	-	*350	10,150	20,130
March	-	-	372	†11,533	22,880
April	515	281	364	10,932	21,680
May	3,750	358	1,553	48,146	95,500
June	3,740	1,160	2,125	63,750	126,400
July	1,430	146	572	17,739	35,180
August	660	10	187	5,805	11,510
September	503	50	133	3,996	7,930
Water year 1932	3,750	4	541	198,101	392,900
October 1932	235	72	177	5,483	10,880
November	235	164	217	6,509	12,910
December	-	-	221	†6,846	13,580
Calendar year 1932	3,750	10	550	201,119	398,900
January 1933	-	-	*250	7,750	15,370
February	-	-	*250	7,000	13,880
March	-	-	297	†9,196	18,240
April	326	184	231	6,949	13,780
May	1,380	205	410	12,721	25,230
June	2,480	360	1,569	47,071	93,360
July	340	8	160	4,955	9,830
August	366	6	68.7	†2,131	4,230
September	26	1	14.5	436	865
Water year 1933	2,480	1	321	117,047	232,200
October 1933	90	13	39.6	1,229	2,440
November	215	107	174	5,222	10,360
December	-	-	254	†7,883	15,640
Calendar year 1933	2,480	1	308	112,543	223,200
January 1934	325	-	275	†8,515	16,890
February	325	207	274	7,683	15,240
March	215	154	177	5,490	10,890
April	330	62	140	4,198	8,330
May	451	23	163	5,046	10,010
June	36	8	17.8	533	1,060
July	41	2	8.6	268	532
August	124	1	11.7	364	722
September	2	1	1.4	41	81
Water year 1934	451	1	127	46,472	92,200
October 1934	25	2	4.8	149	296
November	198	8	58.8	1,764	3,500
December	-	-	206	†6,378	12,650
Calendar year 1934	451	1	111	40,429	80,200
January 1935	-	-	*190	5,890	11,680
February	-	144	171	†4,785	9,490
March	357	150	203	6,308	12,510
April	341	134	198	5,932	11,770
May	1,350	183	441	13,668	27,110
June	4,300	580	1,924	57,732	114,500
July	521	30	148	4,578	9,080
August	283	17	87.2	2,703	5,360
September	64	12	25.7	771	1,530
Water year 1935	4,300	2	303	110,658	219,500

Monthly summary of discharge of Duchesne River at Myton, Utah, 1899-1938--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1935	103	21	38.9	1,206	2,390
November	206	120	176	5,288	10,490
December	250	144	196	†6,063	12,030
Calendar year 1935	4,300	12	315	114,924	227,900
January 1936	-	-	*210	6,510	12,910
February	-	-	*210	6,090	12,080
March	-	-	*190	5,890	11,680
April	1,030	160	490	†14,696	29,150
May	3,300	835	2,166	67,159	133,200
June	3,750	499	1,312	39,353	78,060
July	1,590	134	545	16,886	33,490
August	1,460	73	422	13,088	25,960
September	1,310	118	297	8,903	17,660
Water year 1936	3,750	21	522	191,132	379,100
October 1936	324	115	168	†5,202	10,320
November	-	-	*250	7,500	14,880
December	-	-	*300	9,300	18,450
Calendar year 1936	3,750	73	548	200,577	397,800
January 1937	-	-	*325	10,075	19,980
February	-	-	*350	9,800	19,440
March	-	-	*400	12,400	24,600
April	810	346	578	17,346	34,400
May	4,040	742	2,380	73,784	146,300
June	2,260	476	1,271	38,134	75,640
July	1,280	240	562	17,416	34,540
August	1,500	28	179	5,564	11,040
September	1,070	100	278	8,325	16,510
Water year 1937	4,040	28	589	214,846	426,100
October 1937	353	163	217	6,716	13,320
November	303	216	255	7,658	15,190
December	459	265	317	f9,820	19,480
Calendar year 1937	4,040	28	595	217,038	430,400
January 1938	320	230	258	f7,987	15,840
February	393	251	314	8,789	17,430
March	421	237	302	9,359	18,560
April	1,090	237	553	16,593	32,910
May	3,360	564	1,401	43,422	86,130
June	3,380	658	1,706	51,178	101,500
July	992	82	314	9,749	19,340
August	197	30	82.2	2,549	5,060
September	1,730	177	376	11,284	22,380
Water year 1938	3,380	30	507	185,104	367,100

f Daily discharge estimated Dec. 26 to Jan. 31.

Yearly discharge of Duchesne River at Myton, Utah, 1900-2, 1918-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1900	a638	a461,600	622	450,400
1901	a696	a503,800	‡696	503,900
1902	‡646	‡467,800	‡645	466,600
1912	815	591,400	828	600,800
1913	‡690	499,700	691	500,300
1914	1,030	746,000	1,021	739,000
1915	610	441,600	614	444,400
1916	857	622,200	868	630,000
1917	1,224	886,200	1,232	891,600
1918	628	454,400	625	452,600
1919	‡557	403,400	528	381,900
1920	809	587,200	827	600,400
1921	1,177	852,400	1,174	850,000
1922	1,318	954,000	1,337	967,600
1923	1,039	752,500	1,045	756,600
1924	440	319,800	373	270,900
1925	414	300,000	448	324,300
1926	448	324,300	398	287,900
1927	674	488,100	770	557,700
1928	622	451,600	562	407,900
1929	605	437,800	599	433,400
1930	492	356,500	501	362,700
1931	236	170,700	197	142,600
1932	541	392,900	550	398,900
1933	321	232,200	308	223,200
1934	127	92,800	111	80,200
1935	303	219,500	315	227,900
1936	522	379,100	548	397,900
1937	589	426,100	595	430,400
1938	507	367,100	-	-

a Revised.

UINTA RIVER AT AND NEAR FORT DUCHESNE, UTAH

Location.- 1899-1910: In NW¼ sec. 26, T. 2 S., R. 1 E., Uinta special base and meridian, at highway bridge, a quarter of a mile southeast of Fort Duchesne, and 12 miles upstream from mouth.
1917-20: In SW¼ sec. 35, T. 2 S., R. 1 E., 1½ miles south of Fort Duchesne, and about 1½ miles downstream from earlier site.

Drainage area.- 672 square miles at Fort Duchesne.

Records available.- September 1899 to December 1904, April 1907 to November 1910, at Fort Duchesne and May 1917 to September 1920, near Fort Duchesne; fragmentary.

Extremes.- It has been estimated that discharge exceeded 7,500 second-feet in June 1917; no flow during a part of each summer after 1917.

Gage.- Sept. 14, 1899, to Dec. 3, 1904, two or more staff gages, at about same site and datum, at two different bridges at highway crossing a quarter of a mile southeast of Fort Duchesne; read to hundredths twice daily except during winter.
Apr. 21 to June 13, 1906, gage presumably same as used in 1904, read daily; bridge and gage washed away on June 13.
Apr. 9, 1907, to Nov. 30, 1910, chain gage on another bridge at same site; read daily.
May 11 to June 11, 1917, vertical staff on left bank at about same site as later recording gage; read daily.
June 27 to July 13, 1917, vertical staff at highway bridge at about same site as earlier gages; read daily.
Oct. 23, 1917, to Sept. 30, 1920, water-stage recorder on right bank 100 feet downstream from heading of Fort Duchesne canal, and about 1½ miles downstream from earlier gages at highway bridge.

Remarks.- Records fair but fragmentary. Channel of cobbles and gravel, and very unstable. River frozen each winter, generally December to March. The few winter estimates presented were computed from hydrographic comparison with flow at related stations upstream. Lower station below all diversions; upper station below all diversions except two small canals. Some return water from irrigation diversions upstream enters Uinta River below this station. This record supplements record of Duchesne River at Myton to show the contribution of Duchesne River to Green River.

Monthly summary of discharge of Uinta River at and near Fort Duchesne, Utah, 1899-1904, 1907-10, 1917-20

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
September 14-30, 1899	-	-	*78	1,326	a2,630
October 1899	-	-	*83	2,573	‡5,100
November	-	-	*111	3,330	6,600
December	-	-	*114	3,534	7,010
January 1900	-	-	*125	3,875	7,690
February	-	-	*125	3,500	6,940
March	193	85	‡125	†3,890	‡7,720
April	128	85	99	2,958	5,870
May	2,340	95	924	28,657	56,840
June	1,270	140	431	12,920	25,630
July	140	25	67	†2,089	4,140
August	62	20	36	1,127	2,240
September	125	25	a66	1,985	a3,940
Water year 1900	2,340	20	a193	70,438	a139,700
October 1900	110	70	98	3,030	6,010
November	140	90	105	3,155	6,260
December	140	55	90	†2,785	5,520
Calendar year 1900	2,340	20	a192	69,971	a138,800
January 1901	-	-	*135	4,185	8,300
February	-	-	*135	3,780	7,500
March	295	77	132	4,091	8,110
April	184	87	117	3,501	6,940
May	4,520	218	1,188	36,817	73,030
June	485	184	261	7,821	15,510
July	201	97	140	4,344	8,620
August	485	87	168	5,195	10,300
September	184	97	121	3,632	7,200
Water year 1901	4,520	55	226	82,336	163,300

a Revised.

Monthly summary of discharge of Uinta River at and near Fort Duchesne, Utah, 1899-1904, 1907-10, 1917-20--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1901	184	97	116	3,590	7,120
November	137	109	117	3,497	6,940
December	-	-	*130	4,030	7,990
Calendar year 1901	4,520	77	‡231	84,483	167,600
January 1902	-	-	*125	3,875	7,690
February	-	-	*130	3,640	7,220
March	180	56	118	3,656	7,250
April	160	70	98	2,953	5,860
May	2,000	92	662	20,521	40,700
June	1,640	280	622	18,660	37,010
July	308	54	158	4,905	9,730
August	60	24	43	1,349	2,680
September	232	30	54	1,622	3,220
Water year 1902	2,000	24	198	72,298	143,400
October 1902	92	66	79	2,446	a4,850
November	153	60	102	†3,051	6,050
December	105	56	85	†2,624	5,200
Calendar year 1902	2,000	24	190	69,302	137,460
March 29-31, 1903	231	123	186	559	1,110
April	259	94	125	3,751	7,440
May	1,330	108	461	14,296	28,360
June	2,730	561	1,440	43,201	85,690
July	524	159	343	10,644	21,110
August	159	70	102	3,150	6,250
September	259	70	121	3,641	7,220
October	205	123	149	4,616	9,160
November	205	108	133	4,004	7,940
December 1-12	123	43	73	881	1,750
March 1904	130	46	89	2,767	5,490
April	170	67	99	2,971	5,890
May	1,980	161	966	29,937	59,380
June	918	304	627	18,798	37,290
July	304	148	207	6,404	12,700
August	219	93	149	4,626	9,180
September	181	107	137	4,101	8,130
October	215	145	182	5,639	11,180
November	184	136	168	5,038	9,990
December 1-3	127	121	123	369	732
April 9-30, 1907	535	188	361	7,951	15,770
May	1,870	180	635	19,698	39,070
June	3,040	810	1,859	55,780	110,600
July	3,510	903	1,864	57,793	114,600
August	945	240	487	15,096	29,940
September	370	190	253	7,603	15,080
October	240	170	188	5,820	11,540
November	148	120	139	†4,161	8,250
December 1-15	-	-	102	†1,530	3,030
March 14-31, 1908	174	103	134	2,407	4,770
April	220	103	152	4,550	9,020
May	635	153	342	10,608	21,040
June	2,360	213	857	25,724	51,020
July	435	91	242	7,511	14,900
August	392	117	243	7,540	14,960
September	563	118	216	6,492	12,880
October 1908	358	238	293	9,098	18,050
November	a264	192	b223	†6,703	a13,300
December	-	-	191	c5,917	11,740
January 1909	-	-	151	c4,677	9,280
February	-	-	125	c3,493	6,930
March	-	-	149	c4,621	9,170
April	255	160	187	5,619	11,150
May	582	175	319	9,894	19,620
June	4,470	412	1,936	58,077	115,200
July	1,090	192	430	13,341	26,460
August	614	175	272	8,436	16,730
September	1,540	282	740	22,198	44,030
Water year 1909	4,470	100	‡417	152,074	301,700

a Revised.
b Revised; based on revised daily discharge for Nov. 29-30 of 194 sec.-ft.
c Discharge estimated for successive short periods.

Monthly summary of discharge of Uinta River at and near Fort Duchesne, Utah, 1899-1904, 1907-10, 1917-20--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1909	310	210	246	7,617	15,110
November	255	175	201	6,020	11,940
December	210	132	168	†5,222	10,360
Calendar year 1909	4,470	100	‡409	149,215	296,000
January 1910	-	-	151	c4,690	9,300
February	-	-	149	c4,180	8,290
March	225	147	195	†6,031	11,960
April	818	147	295	8,845	17,540
May	1,290	307	541	16,772	33,270
June	527	36	143	4,300	8,530
July	94	1	25.0	776	1,540
August	147	19	41.9	1,298	2,570
September	216	19	93.8	2,813	5,580
Water year 1910	1,290	1	188	68,564	135,990
October 1910	241	79	144	4,465	8,860
November	147	94	126	3,784	7,510
May 11-31, 1917	560	68	336	7,054	13,990
June	-	370	*4,000	d120,000	238,000
July 1-13	1,800	337	e803	10,437	e20,700
October 23-31	90	69	83.4	751	1,490
November	140	88	108	†3,244	6,430
December 1-17	118	93	108	1,841	3,650
March 15-31, 1918	56	35	e41.3	†702	e1,390
April	35	0	23.0	†690	1,370
May	328	0	47.7	1,480	2,940
June	1,190	4	492	14,754	29,260
July	1,240	0	145	4,499	8,920
August	8	0	.5	15	30
September	213	0	15.8	475	942
October	238	33	91.8	†2,846	5,640
November	132	59	97.1	†2,914	5,780
April 1919	-	0	*40	1,200	2,380
May	-	0	*60	1,860	3,690
June	30	0	*2	60	119
July	0	0	0	0	0
August	0	0	0	0	0
September	126	0	7.7	231	458
October	-	-	*35	1,085	2,150
March 22-31, 1920	118	74	84.7	847	1,680
April	86	36	50.4	†1,512	3,000
May	2,540	28	501	15,540	30,820
June	2,160	70	839	25,161	49,910
July	69	0	11.7	363	720
August	30	0	12.1	376	746
September	-	0	*35	1,050	2,080

c Discharge estimated for successive short periods.
d Daily discharge available June 1-11 and 27-30.
e Revised; erroneously published as full month in Water-Supply Paper 618.

Yearly discharge of Uinta River at and near Fort Duchesne, Utah, 1900-1902, 1909-10

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1900	a193	a139,700	a192	a138,800
1901	226	163,300	‡231	167,600
1902	198	143,400	190	137,460
1909	‡417	301,700	‡409	296,000
1910	188	135,990	-	-

a Revised.

WHITE RIVER NEAR WATSON,[a] UTAH, AND NEAR RANGELY, COLO.

Location.- Lat. 39°58', long. 109°10', in sec. 2, T. 10 S., R. 24 E. Salt Lake meridian, at highway bridge, just downstream from Evacuation Creek, 7 miles north of Watson, 9 miles downstream from Colorado-Utah State line, and about 60 miles upstream from mouth, since Apr. 1, 1923 and also during 1906.

1904-5 and 1918, about 25 miles upstream, in sec. 35, T. 2 N., R. 102 W., sixth principal meridian, at highway bridge 1½ miles northwest of Rangely, Colo.

Drainage area.- 4,020 square miles near Watson.

Records available.- April to October, 1904 and 1905, and May to November 1918 near Rangely, Colo., and April to October 1906 and April 1923 to September 1938 near Watson, Utah.

Average discharge.- 15 years (water years, 1924-38), 776 second-feet.

Extremes of discharge.- 1904-6, 1918, 1923-38: Maximum daily mean discharge determined, 8,160 second-feet July 15, 1929; minimum discharge, 52 second-feet July 19, 20, 1934.

Gage.- Water-stage recorder on right bank just downstream from highway bridge near Watson since Apr. 1, 1923.

1904-5, vertical staff gage on right abutment of wagon bridge near Rangely, rsad to half-tenths or possibly to hundredths twice a day April to October.

1906, chain gage on wagon bridge near Watson (or Dragon), read probably to half-tenths twice a day April to October.

1918, chain gage on bridge near Rangely, read May 19 to November 23.

No relations between gages nor elevations above sea level have been determined.

Cooperation.- Records collected in collaboration with State engineer of Colorado since October 1933, who also furnished entire record of daily discharge for 1918 and 1923-33.

Remarks.- Records good since 1923, except winter estimates which are fair. Earlier records collected under less favorable conditions. River frozen at station during several months each winter, records estimated or computed from occasional discharge measurements and weather records. Records for 1906 identical with those beginning in 1923. Records for 1904-5 and 1918 at the site 25 miles upstream are closely comparable. Diversions for irrigation above and below station.

Monthly summary of discharge of White River near Watson, Utah, and near Rangely, Colo., 1904-6, 1918, 1923-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1904 a/	1,110	(b)	607	†18,210	36,120
May	2,370	950	1,527	47,330	93,880
June	2,070	870	1,582	47,475	94,170
July	830	225	552	17,115	33,950
August	795	285	427	13,230	26,240
September	760	345	401	12,040	23,880
October	480	345	‡398	12,335	24,470
The period	2,370	225	784	167,735	332,700
April 1905	645	413	506	15,179	30,110
May	4,110	645	1,752	54,299	107,700
June	4,750	1,610	3,152	94,565	187,600
July	1,450	489	748	23,182	‡45,980
August	605	502	561	17,389	34,490
September	1,690	381	674	20,216	‡40,100
October	1,550	435	636	19,716	39,110
The period	4,750	381	1,143	244,546	485,100
April 1906	1,230	610	804	24,129	47,860
May	3,250	990	2,002	62,050	123,100
June	2,950	1,470	2,228	66,840	132,600
July	1,480	558	949	29,422	58,360
August	1,080	505	627	19,426	38,530
September	1,360	505	707	21,219	42,090
October	610	522	560	17,348	34,410
The period	3,250	505	1,124	240,434	477,000
May 1918	1,700	(b)	1,230	†38,130	75,630
June	3,950	1,140	2,255	67,650	134,200
July	1,300	532	858	26,586	52,730
August	1,220	442	981	30,408	60,310
September	1,060	324	602	18,075	35,850
October	1,300	442	785	24,347	48,290
November	580	360	455	†13,650	27,070
The period	3,950	324	1,023	218,846	434,100

a Erroneously published as April 15-30 in Water-Supply Paper 618.
b Previously published figure discarded.

a Published as near Dragon, Utah, 1906.

Monthly summary of discharge of White River near Watson, Utah, and near Rangely, Colo., 1904-6, 1918, 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1923	1,030	700	836	25,077	49,740
May	2,940	883	1,939	60,119	119,200
June	2,400	1,070	1,861	55,840	110,800
July	1,150	732	856	26,532	52,630
August	3,470	522	†779	24,154	47,910
September	872	373	†494	14,805	29,370
October 1923	1,410	513	572	17,717	35,140
November	541	461	508	15,227	30,200
December	517	-	478	†14,825	29,400
January 1924	-	-	*440	13,640	27,050
February	-	-	*420	12,180	24,160
March	-	-	*460	14,260	28,280
April	-	-	*530	15,900	31,540
May	2,060	-	1,434	†44,450	88,170
June	4,100	575	1,860	55,799	110,700
July	650	324	437	13,541	26,860
August	1,180	288	348	10,801	21,420
September	501	301	359	10,780	21,380
Water year 1924	4,100	288	653	239,120	474,300
October 1924	-	-	*395	12,245	24,290
November	418	355	381	11,423	22,660
December	-	-	*365	11,315	22,440
Calendar year 1924	4,100	288	618	226,334	449,000
January 1925	-	-	*350	10,850	21,520
February	-	-	*405	11,340	22,490
March	-	-	*590	18,290	36,280
April	1,440	-	957	†28,714	56,950
May	1,920	1,210	1,634	50,650	100,500
June	2,180	1,100	1,533	46,000	91,240
July	1,920	541	965	29,926	59,360
August	951	532	633	19,609	38,890
September	2,100	486	724	21,717	43,080
Water year 1925	2,180	-	745	272,079	539,700
October 1925	1,440	635	771	23,907	47,420
November	694	555	625	18,763	37,220
December	-	-	*600	18,600	36,890
Calendar year 1925	2,180	-	817	298,366	591,800
January 1926	-	-	*580	17,980	35,660
February	-	-	*580	16,240	32,210
March	-	-	*660	20,460	40,580
April	2,010	608	1,056	31,676	62,830
May	2,960	1,200	1,975	61,230	121,400
June	3,360	1,090	2,268	68,030	134,900
July	1,860	557	972	30,132	59,770
August	2,150	356	630	19,525	38,730
September	394	339	354	10,617	21,060
Water year 1926	3,360	339	924	337,160	668,700
October 1926	1,780	416	581	18,015	35,730
November	450	388	406	12,180	24,160
December	-	-	*405	12,555	24,900
Calendar year 1926	3,360	339	873	318,640	631,900
January 1927	-	-	*400	12,400	24,600
February	-	-	*550	15,400	30,550
March	1,040	-	859	†26,628	52,820
April	940	388	521	15,618	30,980
May	2,410	940	1,584	49,090	97,370
June	2,560	1,310	1,779	53,370	105,900
July	1,530	588	864	26,798	53,150
August	758	474	565	17,515	34,740
September	1,420	474	618	18,537	36,770
Water year 1927	2,560	-	762	278,106	551,700
October 1927	648	518	548	16,978	33,680
November	648	513	549	16,474	32,680
December	-	-	*450	13,950	27,670
Calendar year 1927	2,560	-	775	282,758	560,900
January 1928	-	-	*420	13,020	25,820
February	-	-	*420	12,180	24,160
March	955	-	750	†23,250	46,120
April	1,640	645	792	23,749	47,110
May	4,780	1,900	3,009	93,290	185,000
June	3,160	1,510	1,993	59,800	118,600
July	1,640	631	1,105	34,253	67,940
August	1,830	666	803	24,880	49,350
September	790	592	640	19,190	38,060
Water year 1928	4,780	-	959	351,014	696,200

Note.- Estimates of discharge for January to March 1915 and winter discharge for water years 1928-35, and yearly discharge prior to 1934 not previously published.

Monthly summary of discharge of White River near Watson, Utah, and near Rangely, Colo., 1904-6, 1918, 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	3,940	592	892	27,656	54,850
November	910	470	659	19,757	39,190
December	-	-	*400	12,400	24,600
Calendar year 1928	4,780	-	993	363,425	720,800
January 1929	-	-	*450	13,950	27,670
February	-	-	*450	12,600	24,990
March	4,180	-	1,150	†35,650	70,710
April	3,140	1,800	2,466	73,970	146,700
May	7,040	1,930	3,537	109,650	217,500
June	6,720	3,180	4,018	120,550	239,100
July	8,160	1,550	2,923	90,610	179,700
August	7,040	668	1,915	59,368	117,800
September	5,380	910	1,917	57,510	114,100
Water year 1929	8,160	-	1,736	633,671	1,257,000
October 1929	2,070	668	1,029	31,890	63,250
November	820	600	713	21,384	42,410
December	-	-	*500	15,500	30,740
Calendar year 1929	8,160	-	1,761	642,632	1,275,000
January 1930	-	-	*380	11,780	23,370
February	-	-	*560	15,680	31,100
March	-	-	*600	18,600	36,890
April	1,890	582	1,249	37,464	74,310
May	1,920	733	1,200	37,193	73,770
June	2,800	609	1,814	54,408	107,900
July	2,010	386	586	18,177	36,050
August	2,080	496	894	27,708	54,960
September	700	431	502	15,058	29,870
Water year 1930	2,800	-	835	304,842	604,600
October 1930	722	384	487	15,087	29,920
November	412	368	390	11,694	23,190
December	-	-	*230	7,130	14,140
Calendar year 1930	2,800	-	740	269,979	535,500
January 1931	-	-	*290	8,990	17,830
February	-	-	*375	10,500	20,830
March	-	-	*525	16,275	32,280
April	770	-	677	†20,307	40,280
May	1,640	776	1,045	32,402	64,270
June	1,700	460	1,031	30,927	61,340
July	440	183	284	8,808	17,470
August	1,050	180	351	10,885	21,590
September	1,300	265	378	11,351	22,510
Water year 1931	1,700	180	505	184,356	365,600
October 1931	525	368	418	12,972	25,730
November	475	356	392	11,771	23,350
December	-	-	*425	13,175	26,130
Calendar year 1931	1,700	180	516	188,363	373,600
January 1932	-	-	*420	13,020	25,820
February	-	-	*460	13,340	26,460
March	-	-	*710	22,010	43,660
April	-	-	*795	23,850	47,310
May	3,030	1,060	2,105	65,260	129,400
June	2,390	1,548	1,898	56,950	113,000
July	1,690	682	980	30,367	60,230
August	1,880	490	745	23,098	45,810
September	704	416	466	13,981	27,730
Water year 1932	3,030	356	819	299,794	594,600
October 1932	555	412	450	13,945	27,660
November	452	400	428	12,833	25,450
December	-	-	*425	13,175	26,130
Calendar year 1932	3,030	400	825	301,829	598,700
January 1933	-	-	*405	12,555	24,900
February	-	-	*485	13,580	26,940
March	-	-	*685	21,235	42,120
April	-	-	*840	25,200	49,980
May	3,020	495	1,156	35,821	71,050
June	3,800	946	2,678	80,346	159,400
July	998	325	552	17,117	33,950
August	2,280	268	453	14,048	27,860
September	423	316	370	11,090	22,000
Water year 1933	3,800	268	742	270,945	537,400

Note.- Estimates of winter discharge for water years 1928-33, and yearly discharge prior to 1934, not previously published.

Monthly summary of discharge of White River near Watson, Utah, and near Rangely, Colo., 1904-6, 1918, 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	412	363	386	11,981	23,760
November	593	412	441	13,221	26,220
December	454	-	412	†12,770	25,330
Calendar year 1933	3,800	268	737	268,964	533,500
January 1934	-	-	*400	12,400	24,600
February	992	406	539	†15,096	29,940
March	460	384	418	12,946	25,680
April	832	412	573	17,185	34,090
May	956	395	688	21,337	42,320
June	479	80	227	6,798	13,480
July	395	53	109	3,376	6,700
August	406	70	197	6,119	12,140
September	792	181	277	8,321	16,500
Water year 1934	992	53	388	141,550	280,800
October 1934	323	260	281	8,725	17,310
November	523	240	287	8,601	17,060
December	-	-	*325	10,075	19,980
Calendar year 1934	992	53	359	130,979	259,800
January 1935	464	150	339	†10,520	20,870
February	674	200	372	†10,423	20,670
March	766	-	388	†12,030	23,860
April	550	319	392	11,748	23,300
May	2,230	447	1,027	31,833	63,140
June	3,190	1,360	2,080	62,400	123,800
July	1,250	224	526	16,296	32,320
August	593	216	298	9,229	18,310
September	1,290	248	367	10,998	21,810
Water year 1935	3,190	150	556	202,878	402,400
October 1935	384	291	326	10,099	20,030
November	412	347	374	11,226	22,270
December	380	250	331	c10,246	20,320
Calendar year 1935	3,190	150	567	207,048	410,700
January 1936	400	330	364	c11,285	22,380
February	390	335	368	c10,663	21,150
March	490	328	388	c12,017	23,840
April	1,360	328	671	20,119	39,910
May	2,620	1,140	1,976	61,250	121,500
June	2,750	744	1,540	46,200	91,640
July	947	401	602	18,661	37,010
August	1,380	323	479	14,859	29,470
September	992	278	372	11,159	22,130
Water year 1936	2,750	250	650	237,784	471,600
October 1936	696	338	376	11,650	23,110
November	379	295	328	9,848	19,530
December	466	181	287	†8,883	17,620
Calendar year 1936	2,750	181	646	236,594	469,300
January 1937	-	-	*160	4,960	9,840
February	-	-	*290	8,120	16,110
March	760	342	516	†15,998	31,730
April	460	295	370	11,104	22,020
May	2,050	390	1,344	41,666	82,640
June	1,930	558	998	29,935	59,380
July	3,180	412	888	27,526	54,600
August	2,350	202	378	11,706	23,220
September	1,220	309	541	16,241	32,210
Water year 1937	3,180	-	541	197,637	392,000
October 1937	1,590	278	460	14,261	28,290
November	378	294	325	9,751	19,340
December	522	166	275	†8,519	16,900
Calendar year 1937	3,180	-	547	199,787	396,300
January 1938	330	240	285	d8,827	17,510
February	636	260	373	†10,444	20,720
March	2,110	438	679	21,059	41,770
April	1,970	270	727	21,815	43,270
May	3,430	876	2,024	62,731	124,400
June	3,200	1,830	2,607	78,210	155,100
July	1,820	462	804	24,927	49,440
August	1,530	390	510	15,820	31,380
September	3,670	450	861	25,842	51,260
Water year 1938	3,670	166	828	302,206	599,400

c Daily discharge estimated Dec. 5 to Mar. 6.
d Daily discharge estimated.

Note.- Yearly discharge prior to 1934 not previously published.

Yearly discharge of White River near Watson, Utah, and near Rangely, Colo., 1924-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1924	653	474,300	618	449,000
1925	745	539,700	817	591,800
1926	924	668,700	873	631,900
1927	762	551,700	775	560,900
1928	959	696,200	993	720,800
1929	1,736	1,257,000	1,761	1,275,000
1930	835	604,600	740	535,500
1931	505	365,600	516	373,600
1932	819	594,600	825	598,700
1933	742	537,400	737	533,500
1934	388	280,800	359	259,800
1935	556	402,400	567	410,700
1936	650	471,600	646	469,300
1937	541	392,000	547	396,300
1938	828	599,400	-	-

PRICE RIVER AT WOODSIDE, UTAH

Location.- In secs. 9 and 16, T. 18 S., R. 14 E., at railroad bridge at Woodside, about 15 miles upstream from mouth.

Drainage area.- 1,500 square miles.

Records available.- September 1909 to December 1910; January to August 1911 (gage heights). Miscellaneous discharge measurements made in 1909.

Gage.- Distance from reference point on bridge to water surface measured to tenths twice daily, with frequent additional observations during flash floods, particularly in September 1909.

Cooperation.- Field data 1909-10 furnished by Horace W. Sheley, consulting engineer.

Remarks.- Records fair. Channel unstable. All discharge measurements in 1909 and one in 1910 made by timing floats over measured course and using cross-sectional area at constricted opening under railroad bridge, applying coefficients varying from 0.85 to 1.0; other measurements by current meter. Station below all tributaries and diversions.

Monthly summary of discharge of Price River at Woodside, Utah, 1909-10

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
September 1909 a/	6,600	-	598	17,931	35,570
October 1909	95	64	74	2,309	4,580
November	135	b35	80	2,415	4,790
December	-	-	73	†2,252	4,470
January 1910	-	-	*70	2,170	4,300
February	-	-	*70	1,960	†3,890
March	2,870	270	792	24,545	48,680
April	1,880	465	918	27,525	54,600
May	1,710	480	1,102	34,160	67,760
June	b500	37	187	5,620	11,150
July	b1,260	0	114	3,548	7,040
August	b325	0	41	1,284	2,550
September	b1,310	0	221	6,629	13,150
Water year 1910	2,870	0	‡313	114,417	227,000
October 1910	b2,220	59	207	6,425	12,740
November	b332	38	b144	4,326	b8,580
December	150	68	92	2,837	5,630
Calendar year 1910	2,870	0	‡332	121,029	240,100

a Not previously published.
b Revised.

Yearly discharge of Price River at Woodside, Utah, 1910

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1910	313	227,000	‡332	240,100

GREEN RIVER AT GREEN RIVER [a]/ AND AT LITTLE VALLEY, NEAR GREEN RIVER, UTAH

Location.- Lat. 39°00', long. 110°09', in NW¼SW¼ sec. 15, T. 21 S., R. 16 E., at highway bridge, 1 mile southeast of Green River, 18 miles downstream from Price River, 22 miles upstream from San Rafael River, and 117 miles upstream from mouth, except: 1912-24: In sections 4 and 5, T. 22 S., R. 16 E., at Little Valley, 4 miles south of Green River: at ferry in sec. 5, Jan. 1, 1912, to Nov. 6, 1914; and at recorder station a mile upstream from ferry, in sec. 4, Nov. 6, 1914, to June 20, 1924.

Drainage area.- 40,600 square miles at Green River.

Records available.- October 1894 to October 1899, October 1904 to December 1911, and June 1924 to September 1938, at Green River, and January 1912 to June 1924 at Little Valley.

Average discharge.- 39 years (water years, 1895-99, 1905-38), 6,989 second-feet (revised).

Extremes.- 1894-99, 1905-38: Maximum discharge (revised), 68,100 second-feet June 27, 1917 (gage height at Little Valley, 14.53 feet); minimum, 255 second-feet Nov. 26, 1931 (gage height at Green River, 4.17 feet); minimum gage height, 4.08 feet Aug. 1, Dec. 5, 1934 (discharge, 260 second-feet).

Gage.- Water-stage recorder on downstream side of highway bridge pier near right bank, since Sept. 19, 1924. Chain gage on same bridge, at same datum, read twice daily June 21 to Sept. 18, 1924.

Oct. 21, 1894, to Oct. 14, 1899, a series of staff gages and a wire-weight gage at railroad bridge 200 feet downstream from present highway bridge and gage. Principal gages were vertical staff on railroad bridge pier near right bank, installed Oct. 21, 1894; inclined staff on right bank near railroad pump house just upstream from bridge, installed Sept. 29, 1895; and wire-weight gage on downstream side of bridge near same pier, installed Nov. 9, 1896. Temporary staff gages used for various periods, but all gages used during this period set to same datum or to read the same, except that datum was lowered one-half foot June 29, 1895. Datum of gage in use during May 1897 was about 5.1 feet higher than datum of present gage. Gages read daily during entire period, except only once a week November 1896 to March 1897.

Feb. 16, 1905, to Dec. 2, 1910, chain gage on upstream side of railroad bridge near second pier from right bank, at datum roughly 1.68 feet lower than that of inclined staff gage of 1895. Gage read daily without exception.

Dec. 2, 1910, to Dec. 31, 1911, chain gage on present highway bridge, set to read same as preceding gage on railroad bridge, at gage height, 5.53 feet; read daily.

Dec. 18, 1910, to Nov. 6, 1914, staff gage at independent datum on left bank at Little Valley ferry, 8 miles downstream from Green River bridge; read daily after Jan. 1, 1912, and occasionally before then.

Nov. 6, 1914, to June 20, 1924, water-stage recorder at independent datum on left bank at Little Valley, 1 mile upstream from ferry, and 7 miles downstream from Green River bridge.

Discharge measurements.- During 1894-99 and 1905-10, measurements were made from railroad bridge under poor conditions, except for one measurement of low discharge in 1894 and most measurements of low discharge during 1905-10 which were made from ferryboat 450 feet upstream. Measurements made Dec. 3, 1910, to Oct. 20, 1911, from new highway bridge 200 feet upstream were later discarded in favor of measurements made at Little Valley ferry cable 8 miles downstream. Records since Feb. 2, 1911, are based on discharge measurements made at Little Valley ferry cable, supplemented by some measurements made from highway bridge at gage. Prior to 1920, few measurements were made above 25,000 second-feet, and only 5 above 40,000 second-feet, all of which were at Green River bridge. The only measurement above 50,000 second-feet was made June 23, 1917, by the float-area method, at the Green River bridges. From November 1897 to October 1899, only one measurement was made, June 28, 1899. In 1909, it was established that measurements made from railroad bridge should be reduced about 15 percent because of angle of measuring section with direction of flow, and all earlier records have been revised accordingly. Between 1899 and 1905 railroad bridge rebuilt using same piers.

Cooperation.- During water years 1918-27, the station was maintained in cooperation with the Utah Power and Light Company, engineers of which made most of the discharge measurements.

Remarks.- Records at Green River and Little Valley are entirely comparable; since 1910, data obtained at both points were coordinated and used in preparation of record. Records for 1894-99 are poor below 10,000 second-feet and probably fair above. Except for winter periods when ice caused some uncertainty, records are in general fair 1905-11, good 1912-32, and excellent 1933-38. Stage-discharge relation affected by ice nearly every winter, but during most winters backwater effect was not severe and was restricted to one or more brief periods during the period December to March. Records for such periods were estimated or computed from temperature records, discharge measurements, and comparison with flow at related stations and are fair to good. More intensive operation of station since 1933. Water is diverted for irrigation above station.

Revisions.- The tables that follow, giving the revised daily mean discharge of Green River at Green River, Utah, for the water years 1895-1900, supersede the figures of daily discharge that would be obtained by using previously published rating tables with the published gage heights. The revised figures of monthly discharge for the water years 1895-97 published in Water-Supply Papers 395 and 618 were based on these revised daily discharges except for the periods April to June 1896 and May to July 1897 which have been revised again for this report.

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a Published as at Blake or Elgin in earlier years.

Revised daily mean discharge, in second-feet, of Green River at Green River, Utah, for the water years 1895-1900

1895

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		3,250	2,440	2,100	2,100	2,320	6,190	18,000	21,000	13,900	4,610	2,150
2		3,250	2,440	2,010	2,010	2,380	6,190	19,800	19,500	14,200	4,860	2,150
3		3,250	2,440	2,010	2,010	2,690	6,190	19,800	17,700	14,800	4,740	2,150
4		3,250	2,440	2,010	2,010	2,890	6,060	19,100	17,000	15,000	4,610	2,150
5		3,250	2,440	2,010	2,060	2,960	5,060	18,000	16,000	14,200	4,490	2,080
6		3,100	2,260	2,100	2,100	3,180	4,940	16,700	14,200	12,600	4,370	1,940
7		3,100	2,100	2,100	2,100	3,250	4,940	14,800	14,200	12,000	4,260	1,880
8		3,100	2,100	2,060	2,160	3,250	4,940	14,500	15,100	11,300	4,140	1,880
9		3,100	2,100	2,210	2,210	3,410	4,940	13,900	14,500	10,800	3,920	1,760
10		3,100	2,100	2,100	2,210	3,330	4,940	14,200	14,200	10,800	3,920	1,760
11		3,100	2,210	2,160	2,210	3,250	4,940	15,700	13,900	10,400	3,820	1,650
12		3,100	2,100	2,210	2,210	3,250	4,830	18,800	14,800	10,600	3,610	1,650
13		3,100	2,010	2,100	2,100	3,250	4,720	22,500	16,000	11,100	3,510	1,650
14		3,100	2,160	2,100	2,100	3,250	5,060	25,400	17,000	10,100	4,030	1,550
15		3,100	1,700	2,100	2,100	3,410	5,290	22,900	16,300	10,100	4,140	1,550
16	3,250	3,100	1,880	2,160	2,100	3,660	6,470	23,300	16,300	10,400	3,510	1,450
17		2,960	1,970	2,210	2,100	3,500	7,070	25,000	15,700	10,100	3,050	1,450
18		2,960	2,010	2,320	2,100	3,500	7,540	25,800	14,900	9,660	2,960	1,600
19		2,960	2,210	2,320	2,100	3,030	8,710	26,300	14,500	8,380	2,880	2,790
20		2,890	2,320	2,440	2,100	2,960	8,710	26,300	14,800	7,580	2,790	1,940
21		2,820	2,440	2,440	2,100	3,180	9,050	25,400	14,200	6,820	2,700	1,650
22		2,820	2,440	2,380	2,100	3,410	10,200	25,400	13,900	6,640	2,620	1,550
23		2,760	2,440	2,320	2,100	4,310	12,300	25,000	13,100	6,300	2,460	1,550
24		2,690	2,440	2,210	2,100	6,470	13,400	24,500	11,600	6,300	2,300	1,550
25		2,560	2,320	2,160	2,260	6,470	13,900	25,000	11,000	6,300	2,220	1,450
26		2,500	2,380	2,160	2,320	5,660	12,800	24,500	11,000	6,140	2,150	1,550
27		2,440	2,440	2,210	2,320	5,060	12,300	23,700	10,600	5,840	2,300	1,600
28		2,440	2,380	2,210	2,320	4,720	14,200	22,900	10,800	5,400	2,220	1,650
29		2,440	2,320	2,100	-	4,720	15,700	22,900	11,600	5,120	2,150	1,650
30		2,440	2,210	2,100	-	4,940	16,700	22,100	13,100	4,860	2,150	1,760
31		-	2,100	2,100	-	5,410	-	21,400	-	4,740	2,150	-

1896

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,760	1,650	950	1,240	1,450	1,450	4,320	13,400	32,000	11,300	5,650	2,560
2	1,760	1,650	1,000	1,320	1,360	1,450	4,320	13,400	36,600	10,300	5,390	2,400
3	1,760	1,650	1,130	1,400	1,360	1,550	4,110	11,800	40,400	9,430	4,530	2,240
4	1,820	1,820	1,320	1,500	1,360	1,650	4,000	10,800	40,400	8,590	4,070	2,080
5	1,880	1,880	1,360	1,360	1,280	1,600	3,900	9,910	38,200	7,850	3,860	1,970
6	2,010	1,760	1,450	1,360	1,360	1,650	3,510	9,910	36,000	7,520	3,750	1,870
7	2,540	1,650	1,360	1,280	1,400	1,650	3,140	11,000	34,000	7,360	3,550	1,870
8	2,460	1,760	1,360	1,320	1,360	1,650	2,960	12,800	32,900	6,770	3,460	1,800
9	2,300	1,700	1,280	1,360	1,360	1,700	2,960	14,500	31,000	6,480	3,260	1,740
10	2,150	1,650	1,320	1,280	1,450	1,760	2,960	15,600	30,500	6,200	3,170	2,160
11	2,220	1,760	1,360	1,320	1,360	1,760	3,140	16,200	30,500	7,210	3,360	2,080
12	2,540	1,760	1,280	1,360	1,280	1,760	3,320	16,500	28,200	5,520	3,260	2,400
13	2,620	1,760	1,320	1,280	1,280	1,760	3,510	15,600	26,400	5,140	2,900	2,320
14	2,460	1,760	1,360	1,200	1,200	1,880	4,000	14,500	26,000	5,260	2,640	2,160
15	2,380	1,650	1,450	1,160	1,200	2,010	4,110	13,700	26,900	5,650	2,480	2,160
16	2,220	1,550	1,400	1,240	1,280	2,080	4,540	12,300	26,400	5,390	2,320	2,160
17	2,150	1,550	1,450	1,320	1,360	2,150	4,660	10,500	25,600	6,480	2,080	2,320
18	1,940	1,550	1,360	1,400	1,360	2,380	5,010	9,520	24,300	5,390	2,010	2,080
19	1,760	1,550	1,360	1,280	1,450	2,880	4,890	8,620	23,900	5,780	1,870	2,080
20	1,760	1,550	1,450	1,320	1,450	3,420	5,140	7,900	22,400	6,770	1,870	3,460
21	1,760	1,650	1,450	1,360	1,550	3,320	5,360	7,450	22,000	7,210	2,080	5,780
22	1,940	1,650	1,450	1,400	1,550	2,700	6,270	7,000	20,900	6,480	2,400	2,640
23	2,460	1,760	1,360	1,400	1,550	2,620	5,360	7,000	20,500	6,060	2,720	9,430
24	1,880	1,760	1,280	1,360	1,450	2,790	4,770	7,000	19,800	5,780	2,990	6,620
25	1,820	1,560	1,320	1,280	1,450	2,880	4,320	7,450	19,400	5,650	2,900	4,650
26	1,760	1,450	1,360	1,280	1,360	3,230	4,660	9,160	18,200	6,200	3,170	5,260
27	1,760	1,240	1,280	1,280	1,400	3,600	5,360	11,000	16,500	6,200	3,360	3,960
28	1,760	1,030	1,200	1,360	1,450	3,900	7,900	15,100	14,500	6,340	3,860	3,460
29	1,760	975	1,130	1,360	1,450	4,220	10,500	20,200	13,400	6,200	5,020	3,260
30	1,700	900	1,130	1,450	-	4,540	12,300	24,300	12,300	5,920	3,460	2,990
31	1,650	-	1,160	1,450	-	4,320	-	27,700	-	5,920	2,900	-

Revised daily mean discharge, in second-feet, of Green River at Green River, Utah, for the water years 1895-1900--Continued

1897

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,810	1,940					4,100	15,600	51,400	9,900	3,700	2,010
2	2,990	1,870					4,000	17,400	47,600	9,160	3,700	1,880
3	2,720	1,870					3,960	19,800	47,000	8,440	3,510	1,880
4	2,640	1,870					3,960	22,800	44,500	8,440	3,320	2,080
5	2,640	1,740					3,750	26,400	44,500	8,800	3,510	1,880
6	2,480	1,740					4,070	30,500	43,900	8,620	3,700	2,080
7	2,400	1,740					3,860	32,400	35,000	7,900	3,900	2,150
8	2,160	1,740					3,550	34,000	29,600	7,600	4,110	2,380
9	2,160	1,680					3,550	36,000	26,000	7,300	4,110	2,620
10	2,160	1,620					3,750	38,200	23,500	7,000	3,900	2,880
11	2,160	1,560					3,960	40,400	21,300	6,700	3,900	3,600
12	2,010	1,500					3,650	43,300	20,500	6,400	3,900	7,330
13	2,010	1,500					3,650	43,900	22,800	6,140	4,000	7,330
14	2,010	1,500					3,960	42,800	22,000	5,880	4,110	9,450
15	2,010	1,440			1,200		4,530	36,000	22,800	5,620	4,110	4,540
16	2,010	1,390	1,300	1,000		2,000	5,020	35,000	22,000	5,360	3,900	3,900
17	2,010	1,500					5,520	37,100	21,300	5,360	3,700	3,700
18	1,940	1,620					5,920	39,300	20,500	5,360	3,420	2,960
19	1,870	1,740					6,200	41,600	19,400	5,260	3,230	2,790
20	1,870	1,870					6,200	43,900	18,800	5,260	2,960	2,790
21	1,870	1,740					6,620	45,100	17,800	5,010	2,880	2,620
22	1,870	1,620					9,650	45,100	16,800	5,010	2,620	2,460
23	1,870	1,740					9,000	45,100	15,600	4,770	2,620	2,300
24	1,800	1,870					12,300	47,600	14,500	4,770	2,460	2,300
25	1,740	2,010					13,100	52,000	13,400	4,770	2,460	2,300
26	1,740	2,160					10,600	57,300	13,000	4,540	2,300	2,300
27	1,740	2,080					10,100	60,800	12,600	4,320	2,300	2,540
28	1,940	1,800					10,100	62,300	13,400	4,110	2,150	2,880
29	1,740	1,700			-		11,300	63,000	11,600	4,110	2,150	3,230
30	1,940	1,600			-		13,100	59,400	10,800	4,110	2,150	3,800
31	2,080	-			-		-	56,600	-	3,900	2,150	-

1898

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,140	3,510	2,460				3,510	13,200	15,100	17,400	3,050	1,820
2	6,700	3,510	2,300				3,320	13,200	15,400	16,500	2,960	1,940
3	6,700	3,420	2,150				3,140	12,800	16,200	15,600	2,790	1,940
4	6,700	3,320	2,010				3,140	13,200	17,100	14,500	2,620	2,150
5	6,090	3,320	1,880				3,050	12,800	16,500	12,800	2,540	2,620
6	5,660	3,140	1,760				2,960	13,200	15,900	11,000	2,380	2,460
7	5,390	3,140	1,650				3,140	13,200	15,400	9,340	2,300	2,010
8	6,240	3,140	1,550				3,320	14,800	15,100	8,440	2,300	2,010
9	6,860	2,960	1,550				3,510	13,200	14,800	8,080	2,150	1,940
10	7,830	2,960	1,550			2,000	3,700	13,200	13,700	7,900	2,150	1,940
11	7,500	2,960	1,550		1,000		4,000	13,200	13,200	8,620	2,150	2,150
12	7,010	2,790	1,450				4,540	13,200	13,400	8,260	2,150	2,010
13	6,700	2,790	1,450				5,360	12,300	14,000	7,900	2,150	1,880
14	6,240	2,790	1,360				6,270	13,200	14,500	8,260	2,150	1,880
15	5,520	2,790	1,360				6,700	13,200	15,100	7,900	2,150	1,760
16	4,890	2,790	1,280	1,000			7,600	13,700	15,600	7,600	2,150	1,760
17	4,770	2,790	1,200				8,800	14,200	15,900	7,900	2,150	1,650
18	4,540	2,790	1,130				9,520	13,700	16,500	7,450	2,150	1,650
19	4,540	2,790	1,130			3,140	10,300	13,200	16,800	6,550	2,150	1,650
20	4,320	2,790	1,060			3,140	11,200	13,200	17,100	6,140	2,300	1,650
21	4,320	2,790	1,130			3,140	12,000	12,800	17,800	5,880	2,150	1,550
22	4,110	2,790	1,060			3,140	12,800	13,200	18,500	5,620	2,150	1,550
23	4,110	2,790	1,000			3,140	13,200	13,700	19,400	5,360	2,150	1,500
24	3,900	2,790	1,000			3,140	13,000	13,400	21,300	5,260	2,150	1,450
25	4,110	2,790	950		1,200	3,140	12,600	13,400	23,500	5,010	2,150	1,400
26	4,220	2,790	1,000			3,140	12,000	13,700	22,400	4,770	2,150	1,360
27	4,000	2,790	1,060			3,230	11,400	13,200	20,900	4,540	2,080	1,240
28	3,900	2,790	1,030			3,800	11,800	13,700	20,500	4,110	2,010	1,130
29	3,900	2,790	1,100		-	4,110	12,300	13,700	19,800	3,600	2,010	1,130
30	3,700	2,620	1,130		-	3,900	12,800	14,000	19,100	3,420	2,010	1,160
31	3,510	-	1,060		-	3,700	-	14,500	-	3,230	1,880	-

Revised daily mean discharge, in second-feet, of Green River at Green River, Utah, for the water years 1895-1900--Continued

1899

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,650	1,130	1,450	1,760	1,650	4,220	11,200	18,200	39,300	9,340	3,600
2	1,280	1,760	1,200	1,450	1,760	1,650	4,110	10,300	18,800	37,100	8,440	3,510
3	1,280	1,650	1,060	1,450	1,880	1,760	4,110	9,900	19,400	35,000	8,620	3,510
4	1,280	1,880	1,130	1,450	1,880	1,760	4,110	8,800	20,200	32,900	14,800	3,510
5	1,360	1,760	1,200	1,450	1,760	1,880	3,900	8,080	20,900	31,000	14,500	3,510
6	1,360	1,650	1,280	1,450	1,760	1,880	3,900	7,450	21,600	29,100	13,700	3,320
7	1,360	1,760	1,280	1,450	1,760	1,880	3,900	7,750	22,400	27,700	13,200	3,320
8	1,360	1,650	1,280	1,450	1,760	1,880	3,700	8,440	23,200	26,900	12,600	3,320
9	1,360	1,760	1,280	1,450	1,760	1,880	3,700	9,700	24,800	26,000	11,800	3,320
10	1,450	1,650	1,280	1,450	1,760	2,010	3,510	11,400	26,000	25,200	11,200	3,140
11	1,450	1,760	1,280	1,450	1,760	2,010	3,510	12,600	26,900	24,300	10,300	3,140
12	1,450	1,760	1,280	1,450	1,760	2,010	3,700	13,400	27,700	23,500	9,520	3,140
13	1,550	1,760	1,280	1,550	1,760	2,010	3,700	14,500	28,600	22,800	8,800	2,960
14	1,550	1,700	1,280	1,550	1,650	2,010	3,700	15,100	28,600	22,000	8,620	2,880
15	1,550	1,060	1,280	1,550	1,650	2,080	3,900	16,800	30,000	21,300	8,260	2,790
16	1,550	1,060	1,280	1,550	1,650	2,150	4,110	19,100	32,400	20,500	7,900	2,790
17	1,550	1,130	1,280	1,550	1,650	2,150	4,320	20,900	35,500	19,800	7,750	2,790
18	1,550	1,060	1,280	1,550	1,760	2,150	4,660	22,400	35,000	19,100	7,450	2,620
19	1,550	1,000	1,360	1,650	1,760	2,300	5,140	22,400	34,500	18,200	7,150	2,620
20	1,550	1,060	1,360	1,650	1,760	2,460	5,490	21,600	37,600	17,100	6,850	2,540
21	1,550	1,000	1,360	1,650	1,650	2,620	6,010	21,300	38,700	16,200	6,550	2,460
22	1,650	1,000	1,360	1,650	1,650	2,880	6,550	21,300	41,600	15,100	6,270	2,460
23	1,650	1,000	1,360	1,650	1,650	3,230	7,150	20,500	43,300	14,000	5,750	2,380
24	1,650	1,060	1,360	1,650	1,650	3,600	7,750	20,500	44,500	13,000	5,230	2,300
25	1,650	1,060	1,360	1,760	1,650	4,000	8,080	19,800	45,100	12,000	4,890	2,300
26	1,650	1,060	1,360	1,760	1,650	4,430	8,800	18,800	47,600	11,400	4,430	2,300
27	1,650	1,060	1,360	1,880	1,650	4,890	9,520	17,400	48,200	10,800	4,110	2,300
28	1,650	1,130	1,360	1,880	1,650	5,390	10,300	16,500	46,400	10,100	4,110	2,300
29	1,650	1,200	1,360	1,880	-	5,940	11,200	16,800	43,900	9,700	4,000	2,300
30	1,650	1,200	1,450	1,880	-	5,520	11,800	17,400	41,600	9,700	3,900	2,300
31	1,650	-	1,450	1,880	-	4,660	-	17,800	-	9,520	3,700	-

1900

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,300											
2	2,150											
3	2,150											
4	2,150											
5	2,150											
6	2,150											
7	2,150											
8	2,150											
9	2,150											
10	2,150											
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Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1894 a/	-	-	*3,250	100,750	199,800
November	3,250	2,440	2,934	88,030	174,600
December	3,440	1,700	2,237	69,340	137,500
January 1895	2,440	2,010	2,168	67,220	133,300
February	2,320	2,010	2,136	59,810	118,600
March	6,470	2,320	3,776	117,070	232,200
April	16,700	4,720	8,276	248,280	492,500
May	26,300	13,900	21,410	663,600	1,316,000
June	21,000	10,600	14,610	438,400	869,600
July	15,000	4,740	9,435	292,480	580,100
August	4,860	2,150	3,343	103,640	205,600
September	2,790	1,450	1,771	53,140	105,400
Water year 1895	26,300	1,450	6,306	2,301,760	4,565,000
October 1895	2,620	1,650	2,024	62,740	124,400
November	1,880	900	1,586	47,575	94,360
December	1,450	950	1,305	40,440	80,210
Calendar year 1895	26,300	900	6,012	2,194,395	4,352,000
January 1896	1,500	1,160	1,332	41,280	81,880
February	1,550	1,200	1,385	40,170	79,680
March	4,540	1,450	2,462	76,310	151,400
April	12,300	2,960	4,843	145,300	288,200
May	27,700	7,000	12,640	391,820	777,200
June	40,400	12,300	26,340	790,100	1,567,000
July	11,300	5,140	6,721	208,350	413,300
August	5,650	1,870	3,237	100,340	199,000
September	9,430	1,740	3,062	91,860	182,200
Water year 1896	40,400	900	5,564	2,036,285	4,039,000
October 1896	2,990	1,740	2,109	65,390	129,700
November	2,160	1,390	1,725	51,750	102,600
December	-	-	*1,300	40,300	79,930
Calendar year 1896	40,400	-	5,582	2,042,970	4,052,000
January 1897	-	-	*1,000	31,000	61,490
February	-	-	*1,200	33,600	66,640
March	-	-	*2,000	62,000	123,000
April	13,100	3,550	6,434	193,030	382,900
May	63,000	15,600	40,990	1,270,700	2,520,000
June	51,400	10,800	24,800	743,900	1,476,000
July	9,900	3,900	6,126	189,920	376,700
August	4,110	2,150	3,256	100,930	200,200
September	9,450	1,880	3,232	96,960	192,300
Water year 1897	63,000	-	7,889	2,879,480	5,711,000
October 1897	7,830	3,510	5,262	163,120	323,500
November	3,510	2,620	2,941	88,220	175,000
December	2,460	950	1,398	43,350	85,980
Calendsr year 1897	63,000	-	8,265	3,016,730	5,984,000
January 1898	(b)	(b)	*1,000	31,000	61,490
February	(b)	(b)	*1,050	29,400	58,310
March	(b)	(b)	2,576	479,860	158,400
April	13,200	2,960	7,699	230,980	458,100
May	14,800	12,300	13,390	415,200	823,500
June	23,500	13,200	17,020	510,500	1,013,000
July	17,400	3,230	8,030	248,940	493,800
August	3,050	1,880	2,251	69,780	138,400
September	2,620	1,130	1,745	52,340	103,800
Water year 1898	23,500	-	5,377	1,962,690	3,893,000
October 1898	1,650	1,200	1,505	46,640	92,510
November	1,880	1,000	1,376	41,290	81,900
December	1,450	1,060	1,297	40,220	79,780
Calendar year 1898	23,500	-	4,921	1,796,150	3,563,000
January 1899	1,880	1,450	1,597	49,520	98,220
February	1,880	1,650	1,721	48,200	95,600
March	5,940	1,650	2,797	86,720	172,000
April	11,800	3,510	5,618	168,550	334,300
May	22,400	7,450	15,480	479,920	951,900
June	48,200	18,200	32,440	973,200	1,930,000
July	39,300	9,520	20,980	650,320	1,290,000
August	14,800	3,700	8,185	253,740	503,300
September	3,600	2,300	2,858	85,730	170,000
Water year 1899	48,200	1,000	8,011	2,924,050	5,800,000
October 1-14, 1899	2,300	2,150	2,161	30,250	60,000

a Record for full month and resulting yearly discharge not previously published.
b Previously published figure discarded.

Note.- Records for April to June 1896, May to July 1897, October 1897 to October 1899, and corresponding yearly values supersede those published in Water-Supply Paper 618.

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1904	-	-	*2,100	65,100	129,100
November	-	-	*1,600	48,000	95,210
December	-	-	*1,400	43,400	86,080
January 1905	-	-	*1,300	40,300	79,930
February	1,760	-	1,526	†42,728	84,750
March	3,840	1,760	2,988	92,630	183,700
April	6,360	2,720	4,073	122,190	242,300
May	24,200	6,360	12,940	401,210	795,800
June	33,900	14,000	24,290	728,800	1,446,000
July	13,400	4,180	7,641	236,870	469,800
August	3,840	1,870	2,727	84,530	167,700
September	6,030	1,870	2,507	75,200	149,200
Water year 1905	33,900	-	5,427	1,980,948	3,930,000
October 1905	6,190	1,870	2,479	76,850	152,400
November	2,560	1,820	2,053	61,600	122,200
December	1,870	-	1,318	†40,860	81,040
Calendar year 1905	33,900	-	5,490	2,003,758	3,975,000
January 1906	-	-	*1,400	43,400	86,080
February	-	-	1,616	†45,260	89,770
March	21,800	1,870	6,106	189,300	375,500
April	16,900	5,400	9,578	287,350	570,000
May	36,500	12,400	24,780	768,100	1,524,000
June c/	(b)	(b)	d*28,500	855,000	d1,696,000
July	15,700	8,040	d13,430	416,420	826,000
August	8,260	4,430	d6,173	191,360	379,600
September	7,440	3,720	‡5,079	152,380	302,200
Water year 1906	(b)	-	d8,570	3,127,880	d6,205,000
October 1906	3,720	2,560	3,024	93,730	185,900
November	5,870	1,760	3,258	97,740	193,900
December	3,280	1,700	2,430	75,320	149,400
Calendar year 1906	-	-	8,809	3,215,360	6,378,000
January 1907	2,900	1,820	2,440	75,640	150,000
February	(b)	2,560	e3,794	†106,250	e210,700
March	13,400	3,720	6,755	209,410	415,400
April	24,900	6,030	13,980	419,500	832,100
May	42,900	13,100	24,670	764,800	1,517,000
June	48,100	29,800	38,840	1,165,100	2,311,000
July	42,900	19,000	31,630	980,400	1,945,000
August	19,300	7,100	11,220	347,880	690,000
September	7,940	3,220	4,822	144,650	286,900
Water year 1907	48,100	1,700	e12,280	4,480,400	e8,887,000
October 1907	5,260	3,000	3,671	113,810	225,700
November	3,000	1,890	2,565	76,940	152,600
December	1,890	1,240	1,468	45,510	90,270
Calendar year 1907	48,100	1,240	12,190	4,449,870	8,827,000
January 1908	(b)	(b)	*1,300	40,300	79,930
February	(b)	(b)	1,534	†44,480	88,220
March	5,940	1,740	3,573	110,760	219,700
April	12,800	3,450	6,590	197,690	392,100
May	14,600	8,160	11,640	360,890	715,800
June	25,000	11,400	18,070	542,000	1,075,000
July	14,400	4,820	10,260	318,000	630,700
August	8,890	4,820	6,814	211,230	419,000
September	5,300	1,900	3,381	101,440	201,200
Water year 1908	25,000	1,240	5,910	2,163,050	4,290,000
October 1908	6,120	2,700	3,585	111,120	220,400
November	3,220	830	2,159	64,770	128,500
December	(b)	750	801	†24,845	49,280
Calendar year 1908	25,000	750	5,813	2,127,525	4,220,000
January 1909	3,510	930	1,979	61,340	121,700
February	2,580	1,330	1,717	48,070	95,350
March	33,000	1,460	8,124	251,850	499,500
April	16,200	4,820	9,292	278,760	552,900
May	32,700	11,000	22,410	694,700	1,378,000
June	62,200	32,700	46,310	1,389,300	2,756,000
July	42,600	12,800	25,230	782,100	1,551,000
August	14,100	8,000	10,280	318,530	631,800
September	18,000	5,170	9,960	298,790	592,600
Water year 1909	62,200	750	11,850	4,324,175	8,577,000

b Previously published figure discarded.

c Confused gage-height record for June 1906 discarded, and discharge estimated on basis of two discharge measurements at this station and records of discharge of Duchesne, Uinta, and White Rivers, and Green River at Jensen.

d Revised.

e Revised; based on estimated discharge Feb. 6-20 of 3,000 sec.-ft.

Note.- Records Oct. 1, 1904, to Feb. 15, 1905, and resulting yearly discharge, not previously published; estimated from records at related stations on Green, White, Duchesne, and Uinta Rivers.

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1909	4,820	3,220	3,933	121,910	241,800
November	3,510	2,470	2,981	89,440	177,400
December	4,820	800	1,291	†40,025	79,390
Calendar year 1909	62,200	800	11,990	4,374,815	8,677,000
January 1910	-	-	*1,000	31,000	61,490
February	7,500	1,200	2,501	70,020	138,900
March	22,400	2,700	11,430	354,470	703,100
April	24,800	7,560	12,520	375,700	745,200
May	28,800	13,000	21,230	658,200	1,306,000
June	21,300	6,310	13,660	409,770	812,800
July	6,500	1,640	3,228	100,070	198,500
August	4,650	1,100	2,158	66,910	132,700
September	6,500	1,100	2,036	61,070	121,100
Water year 1910	28,800	800	‡6,517	2,378,585	4,718,000
October 1910	5,940	1,300	3,275	101,510	201,300
November	3,450	2,000	2,274	68,210	135,300
December	2,000	770	1,516	†46,990	93,200
Calendar year 1910	28,800	770	6,422	2,343,920	4,650,000
January 1911	4,380	-	2,331	†72,265	143,300
February	8,640	1,630	3,441	96,360	191,100
March	13,500	1,500	6,283	194,760	386,300
April	7,440	4,050	5,481	164,440	326,200
May	16,100	7,770	11,740	363,880	721,700
June	27,600	11,300	19,380	581,500	1,153,000
July	16,400	4,950	8,457	262,170	520,000
August	4,480	2,130	2,926	90,700	179,900
September	4,390	1,520	1,975	59,250	117,500
Water year 1911	27,600	770	5,759	2,102,035	4,169,000
October 1911	6,120	2,440	3,803	117,880	233,800
November	2,640	1,740	2,245	67,340	133,600
December	1,910	1,450	1,643	50,920	101,000
Calendar year 1911	27,600	1,450	5,812	2,121,465	4,207,000
January 1912	2,280	1,430	1,721	53,350	105,800
February	2,070	1,480	1,798	52,150	103,400
March	6,060	1,530	3,689	114,350	226,800
April	9,850	4,870	6,551	196,540	389,800
May	30,600	5,330	16,090	498,670	989,100
June	54,600	22,600	37,630	1,128,900	2,239,000
July	28,800	9,500	16,270	504,400	1,000,000
August	10,900	3,860	6,864	212,790	422,100
September	4,440	2,810	3,624	108,730	215,700
Water year 1912	54,600	1,430	8,486	3,106,020	6,160,000
October 1912	7,790	2,810	3,655	113,320	224,800
November	4,240	2,210	3,506	105,170	208,600
December	1,810	1,290	1,524	47,240	93,700
Calendar year 1912	54,600	1,290	8,567	3,135,610	6,219,000
January 1913	2,400	-	2,303	†71,400	141,600
February	2,400	-	2,229	†62,400	123,800
March	6,040	-	4,156	†128,850	255,600
April	19,100	7,800	12,810	384,400	762,400
May	24,500	9,100	16,500	511,460	1,014,000
June	26,700	12,800	19,430	582,800	1,156,000
July	18,200	8,760	14,730	456,520	905,500
August	8,100	2,240	4,330	134,230	266,200
September	8,760	2,240	3,831	114,940	228,000
Water year 1913	26,700	1,290	‡7,432	2,712,730	5,380,000
October 1913	4,540	2,880	3,565	110,500	219,200
November	3,770	2,720	3,253	97,590	193,600
December	2,720	-	1,679	†52,050	103,200
Calendar year 1913	26,700	-	7,417	2,707,140	5,369,000
January 1914	-	-	*1,950	60,450	119,900
February	7,200	-	2,640	†73,930	146,600
March	12,800	3,300	6,432	199,390	395,500
April	19,600	6,300	12,590	377,660	749,100
May	45,900	‡15,600	28,520	884,200	1,754,000
June	50,800	24,000	35,680	1,070,500	2,123,000
July	23,000	6,600	13,630	422,580	838,200
August	6,300	3,040	4,617	143,130	283,900
September	3,580	2,320	2,625	78,740	156,200
Water year 1914	50,800	-	9,783	3,570,720	7,082,000

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1914	5,710	2,720	3,958	122,700	243,400
November	3,680	1,660	2,723	81,690	162,000
December	2,260	1,100	1,531	†47,470	94,160
Calendar year 1914	50,800	1,100	9,760	3,562,440	7,066,000
January 1915	-	-	#1,500	46,500	92,230
February	-	-	1,766	f49,460	98,100
March	4,540	-	3,035	†94,070	186,600
April	11,200	4,690	7,439	223,170	442,700
May	14,700	7,260	10,990	340,630	675,600
June	19,200	11,700	15,610	468,200	928,700
July	11,100	2,740	6,159	190,930	378,700
August	3,050	1,500	2,075	64,330	127,600
September	8,800	1,460	3,118	93,550	185,600
Water year 1915	19,200	1,100	4,994	1,822,700	3,615,000
October 1915	8,440	2,800	3,937	122,060	242,100
November	3,910	2,380	2,834	85,020	168,600
December	2,460	875	1,879	58,240	115,500
Calendar year 1915	19,200	875	5,031	1,836,160	3,642,000
January 1916	-	-	1,715	f53,180	105,500
February	2,720	-	2,238	†64,900	128,700
March	17,600	2,630	9,075	281,340	558,000
April	18,500	7,340	10,520	315,730	626,200
May	30,300	15,800	20,960	649,700	1,289,000
June	26,200	15,800	23,000	689,900	1,368,000
July	15,400	6,420	10,340	320,590	635,900
August	8,520	3,150	5,748	178,190	353,400
September	2,970	1,990	2,571	77,120	153,000
Water year 1916	30,300	875	†7,912	2,895,970	5,744,000
October 1916	11,300	2,570	4,994	154,820	307,100
November	3,620	1,070	2,565	76,950	152,600
December	3,060	1,140	2,055	63,700	126,300
Calendar year 1916	30,300	1,140	7,995	2,926,120	5,804,000
January 1917	-	-	1,294	f40,100	79,540
February	-	-	2,089	f58,500	116,000
March	4,540	2,800	3,351	103,870	206,000
April	24,100	5,360	11,930	357,910	709,900
May	44,500	10,900	26,220	812,900	1,612,000
June	66,700	31,800	46,300	1,389,100	2,755,000
July	59,400	10,900	27,990	867,800	1,721,000
August	12,600	3,810	6,655	206,320	409,200
September	5,000	3,420	4,011	120,320	238,700
Water year 1917	66,700	-	11,650	4,252,290	8,433,000
October 1917	3,810	2,970	3,256	100,950	200,200
November	3,240	2,800	3,096	92,890	184,200
December	3,330	1,800	2,723	84,420	167,400
Calendar year 1917	66,700	-	11,600	4,235,080	8,399,000
January 1918	3,330	1,200	2,352	72,900	144,600
February	3,060	2,090	2,450	68,600	136,100
March	5,730	2,970	4,082	126,540	251,000
April	9,390	5,120	6,475	194,240	385,300
May	18,400	5,980	d13,770	426,960	846,900
June	43,300	13,500	29,060	871,400	1,728,000
July	23,600	5,240	11,480	355,910	705,900
August	4,880	1,920	3,276	101,560	201,400
September	4,430	1,830	2,572	77,160	153,000
Water year 1918	43,300	1,200	7,051	2,573,530	5,104,000
October 1918	4,650	2,800	3,685	114,230	226,600
November	3,520	1,420	3,013	90,390	179,300
December	2,970	1,310	2,116	65,600	130,100
Calendar year 1918	43,300	1,200	7,029	2,565,490	5,088,000
January 1919	-	-	1,420	†44,030	87,330
February	-	-	#1,750	49,000	97,190
March	10,900	-	4,496	†139,370	276,400
April	15,400	4,880	7,975	239,240	474,500
May	19,900	10,500	14,850	460,500	913,400
June	19,900	3,620	9,286	278,590	552,600
July	3,420	850	1,755	54,395	107,900
August	1,700	838	1,203	37,299	73,980
September	2,460	834	1,788	53,634	106,400
Water year 1919	19,900	834	4,456	1,626,278	3,226,000

d Revised.
f Discharge estimated for successive periods.

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1919	2,240	1,600	1,994	61,810	122,600
November	2,450	710	2,102	63,050	125,100
December	-	510	1,473	†45,660	90,570
Calendar year 1919	19,900	510	4,182	1,526,578	3,028,000
January 1920	-	-	*1,750	54,250	107,600
February	3,040	-	2,431	†70,510	139,900
March	5,250	2,800	3,965	122,920	243,800
April	12,300	3,130	6,534	196,010	388,800
May	48,100	4,580	26,720	828,430	1,643,000
June	49,100	20,800	34,060	1,021,700	2,027,000
July	19,700	5,810	10,220	316,820	628,400
August	6,370	3,230	4,534	140,540	278,800
September	3,110	2,050	2,537	76,120	151,000
Water year 1920	49,100	510	8,191	2,997,920	5,947,000
October 1920	3,760	2,220	2,607	80,820	160,300
November	4,120	2,600	3,313	99,390	197,100
December	2,420	1,100	1,896	58,780	116,600
Calendar year 1920	49,100	1,100	8,378	3,066,290	6,082,000
January 1921	-	-	1,971	†61,100	121,200
February	4,670	2,170	3,042	85,180	169,000
March	11,400	5,460	7,669	237,740	471,600
April	10,300	5,060	7,450	223,490	443,300
May	39,200	8,390	25,160	779,970	1,547,000
June	64,100	24,000	46,650	1,399,600	2,776,000
July	22,800	5,610	10,750	333,350	661,200
August	7,040	4,220	5,502	170,550	338,300
September	4,670	2,310	3,435	103,040	204,400
Water year 1921	64,100	1,100	9,953	3,633,010	7,206,000
October 1921	3,760	2,190	2,346	72,730	144,300
November	2,780	2,280	2,463	73,900	146,600
December	3,360	1,260	2,179	67,550	134,000
Calendar year 1921	64,100	1,260	9,885	3,609,200	7,157,000
January 1922	2,580	955	1,754	54,365	107,800
February	3,720	1,800	2,474	69,280	137,400
March	19,000	2,210	6,421	199,040	394,800
April	10,600	4,290	6,046	181,370	359,700
May	44,000	11,500	26,770	829,900	1,646,000
June	45,800	23,100	37,420	1,122,700	2,227,000
July	21,700	3,830	8,595	266,450	528,500
August	8,680	2,920	4,071	126,210	250,300
September	4,650	1,960	2,885	86,560	171,700
Water year 1922	45,800	955	8,630	3,150,055	6,248,000
October 1922	2,580	1,960	2,062	63,910	126,800
November	2,830	2,340	2,587	77,610	153,900
December	2,740	1,540	2,132	66,090	131,100
Calendar year 1922	45,800	955	8,612	3,143,485	6,235,000
January 1923	2,610	1,810	2,198	68,140	135,200
February	2,520	1,670	2,119	59,320	117,700
March	10,000	2,560	3,673	113,850	225,800
April	16,400	8,570	11,470	344,050	682,400
May	42,000	13,400	25,830	800,800	1,588,000
June	41,500	18,400	30,850	925,500	1,836,000
July	-	9,210	12,940	†401,230	795,800
August	9,750	3,570	5,783	179,260	355,600
September	4,410	2,710	3,303	99,080	196,500
Water year 1923	42,000	1,540	8,764	3,198,840	6,345,000
October 1923	-	3,550	3,887	†120,510	239,000
November	3,790	-	3,382	†101,470	201,300
December	2,900	-	2,066	†64,060	127,100
Calendar year 1923	42,000	-	8,979	3,277,270	6,500,000
January 1924	-	-	1,444	†44,770	88,800
February	-	-	2,868	†83,180	165,000
March	5,200	-	3,306	†102,480	203,300
April	21,600	2,780	11,310	339,340	673,100
May	24,300	7,670	15,880	492,280	976,400
June	16,800	5,970	12,590	377,700	749,200
July	5,730	1,910	3,627	112,450	223,000
August	1,940	1,180	1,473	45,670	90,590
September	6,140	1,090	1,499	44,980	89,220
Water year 1924	24,300	-	5,270	1,928,890	3,826,000

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1924	2,270	1,250	1,708	52,950	105,000
November	2,270	1,760	2,052	61,570	122,100
December	1,990	-	1,179	†36,544	72,480
Calendar year 1924	24,300	-	4,901	1,793,914	3,558,000
January 1925	-	-	1,452	†45,000	89,260
February	-	-	2,332	†65,300	129,500
March	9,700	2,360	4,475	†138,730	275,200
April	12,200	5,290	7,887	236,610	469,300
May	20,100	6,080	13,690	424,340	841,700
June	20,100	9,450	14,100	423,000	839,000
July	15,400	4,260	9,268	287,300	569,900
August	7,810	3,320	4,372	135,530	268,800
September	9,800	2,960	‡4,529	135,870	‡269,500
Water year 1925	20,100	-	‡5,597	2,042,744	4,052,000
October 1925	9,990	3,540	4,847	150,250	298,000
November	3,760	2,600	3,222	96,660	191,700
December	3,260	1,240	2,373	73,550	145,900
Calendar year 1925	20,100	-	6,061	2,212,140	4,388,000
January 1926	2,200	1,640	1,897	58,810	116,600
February	2,540	1,760	2,275	63,690	126,300
March	8,940	2,500	5,602	173,650	344,400
April	18,300	3,760	10,270	308,070	611,000
May	24,000	9,710	18,240	565,310	1,121,000
June	23,700	4,890	13,120	393,620	780,700
July	16,100	2,770	5,766	178,760	354,600
August	6,240	1,860	3,228	100,080	198,500
September	2,280	1,260	1,575	47,260	93,740
Water year 1926	24,000	1,240	6,054	2,209,710	4,382,000
October 1926	2,840	1,570	1,924	59,640	118,300
November	2,150	1,550	1,729	51,860	102,900
December	2,460	875	1,685	†52,245	103,600
Calendar year 1926	24,000	875	5,625	2,052,995	4,072,000
January 1927	1,850	-	1,656	†51,340	101,800
February	2,620	1,730	1,996	55,890	110,900
March	4,820	2,330	3,545	109,910	218,000
April	10,500	4,440	6,466	193,990	384,800
May	31,400	11,400	20,750	643,200	1,276,000
June	32,700	12,200	22,070	662,000	1,313,000
July	26,300	5,390	12,330	382,330	758,300
August	5,150	2,750	3,755	116,400	230,900
September	27,500	2,460	8,515	255,440	506,700
Water year 1927	32,700	875	7,217	2,634,245	5,225,000
October 1927	7,290	3,590	4,935	153,000	303,500
November	5,520	3,280	4,320	129,610	257,100
December	4,160	1,350	2,335	†72,380	143,600
Calendar year 1927	32,700	-	7,741	2,825,490	5,605,000
January 1928	3,410	2,300	2,802	†86,860	172,300
February	3,040	2,350	2,725	79,020	156,700
March	11,700	3,160	6,432	199,400	395,500
April	11,800	4,340	6,637	199,100	394,900
May	44,300	17,000	30,560	947,400	1,879,000
June	44,400	10,600	21,160	634,700	1,259,000
July	11,100	4,310	7,240	224,450	445,200
August	4,950	2,580	3,693	114,480	227,100
September	3,800	1,690	2,095	62,860	124,700
Water year 1928	44,400	1,350	7,932	2,903,260	5,759,000
October 1928	12,000	1,540	3,567	110,580	219,300
November	3,900	2,220	2,849	85,470	169,500
December	2,810	930	1,586	49,164	97,520
Calendar year 1928	44,400	930	7,632	2,793,484	5,541,000
January 1929	2,180	1,750	2,007	62,230	123,400
February	2,390	1,600	1,971	†55,200	109,500
March	23,200	2,120	7,858	243,590	483,200
April	21,200	6,580	12,240	367,090	728,100
May	41,900	10,200	25,060	776,800	1,541,000
June	33,900	20,400	28,270	848,200	1,682,000
July	19,800	6,240	10,400	322,400	639,500
August	10,400	2,930	4,769	147,850	293,300
September	11,200	3,090	6,346	190,380	377,600
Water year 1929	41,900	930	8,929	3,258,954	6,464,000

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1929	5,290	3,450	4,157	†128,860	255,600
November	3,450	1,540	2,792	83,770	166,200
December	2,800	754	2,137	66,244	131,400
Calendar year 1929	41,900	754	9,021	3,292,614	6,531,000
January 1930	1,780	-	1,253	†38,840	77,040
February	6,650	-	4,164	†116,580	231,200
March	5,290	3,250	3,982	123,430	244,800
April	17,500	3,620	10,250	307,640	610,200
May	18,100	8,260	11,830	366,660	727,300
June	22,500	10,300	17,480	524,300	1,040,000
July	9,160	3,530	5,513	170,900	339,000
August	17,800	3,420	8,228	255,080	505,900
September	6,210	2,560	3,795	113,850	225,800
Water year 1930	22,500	754	6,291	2,296,154	4,554,000
October 1930	4,570	3,330	3,926	121,710	241,400
November	3,260	1,200	2,481	74,440	147,600
December	2,190	1,440	1,863	57,760	114,600
Calendar year 1930	22,500	-	6,222	2,271,190	4,505,000
January 1931	1,670	1,360	1,532	47,490	94,200
February	2,450	1,360	1,943	54,410	107,900
March	5,040	2,470	3,506	108,700	215,600
April	7,710	2,870	4,983	149,480	296,500
May	12,800	3,990	7,783	241,270	478,600
June	10,900	3,020	7,447	223,420	443,100
July	2,950	732	1,693	52,472	104,100
August	2,560	1,060	1,489	46,150	91,540
September	1,720	640	943	28,296	56,120
Water year 1931	12,800	640	3,303	1,205,598	2,391,000
October 1931	2,090	1,250	1,485	46,030	91,300
November	1,950	465	1,498	44,953	89,160
December	1,400	400	869	†26,950	53,450
Calendar year 1931	12,800	400	2,930	1,069,621	2,122,000
January 1932	1,400	1,100	1,288	†39,940	79,220
February	1,940	1,260	1,589	†46,070	91,380
March	8,400	1,950	4,127	127,950	253,800
April	12,400	4,740	8,255	247,640	491,200
May	36,600	8,800	22,530	698,420	1,385,000
June	26,200	17,600	20,930	627,900	1,245,000
July	24,800	4,740	10,910	338,090	670,600
August	6,980	2,470	3,864	119,770	237,600
September	3,840	1,540	2,254	67,630	134,100
Water year 1932	36,600	400	6,643	2,431,343	4,822,000
October 1932	2,400	1,530	1,898	58,860	116,700
November	2,370	2,120	2,275	68,250	135,400
December	2,220	-	1,265	†39,201	77,750
Calendar year 1932	36,600	-	6,775	2,479,711	4,918,000
January 1933	-	-	1,455	†45,100	89,450
February	2,300	1,510	1,678	†46,970	93,160
March	4,710	2,000	3,095	†95,930	190,300
April	8,380	3,040	4,505	135,140	268,000
May	18,100	5,520	10,770	333,960	662,400
June	27,400	11,200	23,030	691,000	1,371,000
July	10,200	2,240	5,426	168,220	333,700
August	3,040	1,140	1,742	54,010	107,100
September	2,150	1,130	1,345	40,350	80,030
Water year 1933	27,400	-	4,868	1,776,981	3,525,000
October 1933	1,540	1,130	1,232	38,190	75,750
November	1,690	1,200	1,486	44,570	88,400
December	2,090	478	1,392	43,152	85,590
Calendar year 1933	27,400	478	4,758	1,736,592	3,445,000
January 1934	2,200	1,190	1,625	50,390	99,950
February	2,800	1,600	2,149	60,180	119,400
March	2,390	1,900	2,155	66,810	132,500
April	4,560	2,130	2,927	87,820	174,200
May	6,260	3,750	4,632	143,600	284,800
June	3,880	1,020	2,128	63,840	126,600
July	969	443	645	19,996	39,660
August	1,000	387	712	22,066	43,770
September	1,200	450	603	18,092	35,880
Water year 1934	6,260	387	1,805	658,706	1,306,000

Monthly summary of discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1894-99, 1904-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1934	870	576	718	22,248	44,130
November	1,080	810	935	28,045	55,630
December	1,290	380	928	28,758	57,040
Calendar year 1934	6,260	380	1,676	611,845	1,214,000
January 1935	1,330	900	1,112	†34,477	68,380
February	1,810	1,240	1,509	42,250	83,800
March	2,410	1,180	1,893	58,680	116,400
April	5,180	1,900	2,892	86,750	172,100
May	18,400	3,880	7,431	230,360	456,900
June	30,700	13,500	21,240	637,200	1,264,000
July	12,700	2,290	5,394	167,200	331,600
August	3,580	1,610	2,020	62,610	124,200
September	2,110	892	1,273	38,178	75,720
Water year 1935	30,700	380	3,936	1,436,756	2,850,000
October 1935	1,140	903	959	29,724	58,960
November	1,580	1,140	1,393	41,800	82,910
December	1,440	800	987	30,588	60,670
Calendar year 1935	30,700	800	‡3,999	1,459,817	2,896,000
January 1936	1,300	900	1,084	33,600	66,640
February	2,130	1,100	1,576	45,700	90,640
March	2,800	2,000	2,288	70,940	140,700
April	19,800	1,900	7,520	225,590	447,500
May	28,800	15,400	21,370	662,600	1,314,000
June	26,200	9,740	17,660	529,940	1,051,000
July	13,000	3,500	6,181	191,600	380,000
August	11,400	2,180	5,160	159,960	317,300
September	3,750	1,490	2,291	68,730	136,300
Water year 1936	28,800	800	‡5,712	2,090,772	4,147,000
October 1936	2,800	1,550	1,922	59,570	118,200
November	2,800	1,780	2,194	65,820	130,600
December	1,800	914	1,317	40,836	81,000
Calendar year 1936	28,800	900	5,888	2,154,886	4,274,000
January 1937	-	-	*1,000	31,000	61,490
February	-	-	*1,700	47,600	94,410
March	11,700	2,040	4,575	141,840	281,300
April	16,000	4,010	7,583	227,490	451,200
May	26,800	7,500	18,810	583,220	1,157,000
June	25,000	11,000	15,100	453,100	898,700
July	20,700	4,280	8,995	278,840	553,100
August	4,710	1,690	2,594	80,410	159,500
September	5,700	1,420	2,475	74,240	147,300
Water year 1937	26,800	-	5,709	2,083,966	4,134,000
October 1937	3,140	1,450	1,987	61,590	122,200
November	2,340	1,980	2,090	62,690	124,300
December	2,900	742	1,953	60,554	120,100
Calendar year 1937	26,800	742	5,760	2,102,574	4,171,000
January 1938	2,070	1,000	1,643	50,940	101,000
February	2,900	1,750	2,254	63,110	125,200
March	7,640	2,340	4,277	132,600	263,000
April	18,600	2,900	7,862	235,860	467,800
May	29,400	8,700	18,250	565,710	1,122,000
June	30,600	15,100	22,600	678,100	1,345,000
July	15,700	4,100	7,910	245,220	486,400
August	5,370	1,910	2,821	87,440	173,400
September	10,800	2,450	4,982	149,460	296,400
Water year 1938	30,600	742	6,557	2,393,274	4,747,000

Yearly discharge of Green River at Green River and at Little Valley, near Green River, Utah, 1895-99, 1905-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1895	6,306	4,565,000	6,012	4,352,000
1896	5,564	4,039,000	5,682	4,052,000
1897	7,889	5,711,000	8,265	5,984,000
1898	5,377	3,893,000	4,921	3,565,000
1899	8,011	5,800,000	-	-
1905	5,427	3,930,000	5,490	3,975,000
1906	a8,570	a6,205,000	8,809	6,378,000
1907	a12,280	a8,887,000	12,190	8,827,000
1908	5,910	4,290,000	5,813	4,220,000
1909	11,850	8,577,000	11,990	8,677,000
1910	‡6,517	4,718,000	6,422	4,650,000
1911	5,759	4,169,000	5,812	4,207,000
1912	8,486	6,160,000	8,567	6,219,000
1913	‡7,432	5,380,000	7,417	5,369,000
1914	9,783	7,082,000	9,760	7,066,000
1915	4,994	3,615,000	5,031	3,642,000
1916	‡7,912	5,744,000	7,995	5,804,000
1917	11,550	8,433,000	11,600	8,399,000
1918	7,051	5,104,000	7,029	5,088,000
1919	4,456	3,226,000	4,182	3,028,000
1920	8,191	5,947,000	8,378	6,082,000
1921	9,953	7,206,000	9,885	7,157,000
1922	8,630	6,248,000	8,612	6,235,000
1923	8,764	6,345,000	8,979	6,500,000
1924	5,270	3,826,000	4,901	3,558,000
1925	‡5,597	4,052,000	6,061	4,388,000
1926	6,054	4,382,000	5,625	4,072,000
1927	7,217	5,225,000	7,741	5,605,000
1928	7,932	5,759,000	7,632	5,541,000
1929	8,929	6,464,000	9,021	6,531,000
1930	6,291	4,554,000	6,222	4,505,000
1931	3,303	2,391,000	2,930	2,122,000
1932	6,643	4,822,000	6,775	4,918,000
1933	4,868	3,525,000	4,758	3,445,000
1934	1,805	1,306,000	1,676	1,214,000
1935	3,936	2,850,000	‡3,999	2,896,000
1936	‡5,712	4,147,000	5,888	4,274,000
1937	5,709	4,134,000	5,760	4,171,000
1938	6,557	4,747,000	-	-

a Revised.

Note.- Records for water years 1896-99 supersede those published in Water-Supply Paper 618.

SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH

Location.- In W½ sec. 27, T. 22 S., R. 14 E., at county road bridge on road from Green River to Hanksville, 16 miles southwest of Green River, and about 25 miles above mouth.

Drainage area.- 1,690 square miles.

Records available.- May 1909 to September 1918; September 1919 to July 1920 (gage heights). Miscellaneous discharge measurements made 1918-20.

Average discharge.- 9 years (water years, 1910-18), 273 second-feet.

Extremes.- 1909-18: Maximum discharge observed, 7,300 second-feet Oct. 8, 1916 (gage height, 12.6 feet); no flow Aug. 24-27, 29, Sept. 15, 1910, and Aug. 15 to Sept. 8, 1915 (gage height of zero flow, about 1.2 feet).

Gage.- May 5, 1909, to Sept. 10, 1919, vertical staff gage at right bank attached to downstream side of log-crib abutment of pile-trestle bridge; read daily except for occasional omissions due to absence of observer, or sand bar or ice at gage. Gage readings Oct. 1, 1918, to Sept. 9, 1919, discarded as unreliable.
Sept. 10, 1919, to July 10, 1920, steel tape gage on downstream side of bridge, at datum 6.18 feet lower than preceding staff gage.

Remarks.- Records fair. Stage-discharge relation affected by ice from December to February each winter. The shifting sand of the stream bed affected accuracy of records, particularly for low discharges. Winter discharge and discharge for periods of missing gage heights estimated or computed from occasional discharge measurements and records of discharge of three principal tributaries, Cottonwood, Ferron, and Huntington Creeks. Station is below all appreciable tributaries and diversions. Several small transmountain diversions from tributaries for irrigation in Sevier Lake Basin.

Monthly summary of discharge of San Rafael River near Green River, Utah, 1909-18

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
May 1909 a/	1,660	-	645	19,930	39,630
June	3,610	1,090	2,448	73,430	145,600
July	1,310	200	525	16,210	32,150
August	3,730	180	745	23,090	45,800
September	4,720	150	655	19,640	38,960
October 1909	140	110	128	3,955	7,840
November	360	130	162	4,860	9,640
December	-	-	*125	3,875	7,690
January 1910	-	-	*150	4,650	9,220
February	-	-	*200	5,600	11,110
March	2,330	320	729	22,591	44,810
April	1,880	310	748	22,442	44,510
May	2,100	690	1,196	37,060	73,550
June	900	57	307	9,208	18,260
July	492	8	110	3,415	6,770
August	390	0	44.3	1,372	2,720
September	3,040	0	235	7,043	13,970
Water year 1910	3,040	0	345	126,091	250,100
October 1910	2,250	46	222	6,887	13,660
November	310	36	98.8	2,965	5,880
December	150	68	101	3,128	6,200
Calendar year 1910	3,040	0	346	126,381	250,700
January 1911	1,550	102	224	6,957	13,800
February	649	137	196	5,495	10,900
March	261	108	164	5,089	10,090
April	272	119	163	4,903	9,720
May	835	128	492	15,237	30,220
June	939	214	606	18,229	36,160
July	238	54	98.8	3,063	6,080
August	614	50	86.0	2,729	5,410
September	2,070	50	152	4,573	9,070
Water year 1911	2,250	36	217	79,255	157,200

a Discharge estimated May 1-4, record for full month not previously published.

Note.- Records for December 1909 to February 1910 and resulting yearly discharge not previously published.

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Monthly summary of discharge of San Rafael River near Green River, Utah, 1909-18--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1911	2,680	59	356	11,029	21,880
November	78	57	‡64.2	†1,925	3,820
December	-	-	#50	1,860	3,690
Calendar year 1911	2,680	-	222	81,089	160,800
January 1912	-	-	#50	1,550	3,070
February	-	-	#70	2,030	4,030
March	-	-	#100	3,100	6,150
April	178	61	95.7	2,872	5,700
May	2,270	56	406	12,585	24,960
June	3,510	600	1,570	47,113	93,450
July	645	20	223	†6,902	13,690
August	532	-	74.7	†2,317	4,600
September	-	-	59.7	†1,792	3,550
Water year 1912	3,510	20	260	95,075	188,600
October 1912	2,890	-	384	†11,916	23,640
November	1,680	-	199	†5,975	11,850
December	-	-	46.6	†1,445	2,870
Calendar year 1912	3,510	-	272	99,598	197,600
January 1913	-	-	#40	1,240	2,460
February	-	-	#50	1,400	2,780
March	205	88	136	4,218	8,370
April	1,060	80	338	10,151	20,130
May	1,980	500	1,080	33,325	66,100
June	1,490	54	464	13,920	27,610
July	460	39	136	4,224	8,380
August	580	2	52.8	1,636	3,240
September	2,560	8	237	7,108	14,100
Water year 1913	2,560	2	‡265	96,559	191,500
October 1913	228	43	72.5	2,249	4,460
November	645	46	125	3,745	7,430
December	120	-	65.1	†2,019	4,000
Calendar year 1913	2,560	2	234	85,235	169,100
January 1914	-	-	#55	1,705	3,380
February	-	-	#65	1,820	3,610
March	-	-	#90	2,790	5,530
April	702	82	251	7,538	14,950
May	3,140	114	1,626	50,393	99,950
June	3,580	145	1,650	49,510	98,200
July	1,300	95	294	9,100	18,050
August	256	18	45.1	†1,398	2,770
September	96	16	25.2	755	1,500
Water year 1914	3,580	16	364	133,022	263,800
October 1914	400	38	159	4,920	9,760
November	50	38	41.2	1,236	2,450
December	82	-	60.9	†1,888	3,740
Calendar year 1914	3,580	16	365	133,053	263,900
January 1915	-	-	#48	1,488	2,950
February	-	-	#47	1,316	2,610
March	780	77	208	†6,446	12,790
April	580	100	197	5,905	11,710
May	728	122	380	11,767	23,340
June	1,030	114	449	13,463	26,700
July	158	8	38.0	1,179	2,340
August	15	0	1.2	37	73
September	665	0	34.1	1,023	2,030
Water year 1915	1,030	0	139	50,668	100,500
October 1915	12	3	7.5	233	462
November	700	11	123	3,699	7,340
December	97	-	68.6	†2,127	4,220
Calendar year 1915	1,030	0	133	48,683	96,560
January 1916	-	-	#58	1,798	3,570
February	-	-	80.9	†2,347	4,660
March	1,080	70	379	†11,764	23,330
April	472	104	207	5,215	12,330
May	1,140	258	‡542	16,787	33,300
June	1,440	271	932	27,951	55,440
July	786	77	196	6,091	12,080
August	1,780	90	‡344	10,657	21,140
September	90	65	71.3	2,140	4,240
Water year 1916	1,780	3	251	91,810	182,100

Monthly summary of discharge of San Rafael River near Green River, Utah, 1909-18--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1916	7,300	77	848	26,296	52,160
November	129	38	81.1	†2,433	4,830
December	164	14	87.2	†2,703	5,360
Calendar year 1916	7,300	14	320	117,185	232,400
January 1917	-	-	*20	620	1,230
February	437	-	100	†2,799	5,550
March	293	59	131	4,049	8,030
April	619	71	194	5,827	11,560
May	1,870	246	855	26,497	52,560
June	4,170	895	2,245	67,352	133,600
July	1,000	119	370	11,460	22,730
August	258	65	109	3,384	6,710
September	1,570	77	219	6,574	13,040
Water year 1917	7,300	-	438	159,994	317,400
October 1917	98	44	64.8	2,008	3,980
November	90	54	79.0	2,369	4,700
December	104	35	63.9	1,980	3,930
Calendar year 1917	4,170	-	370	134,919	267,600
January 1918	77	-	56.0	†1,735	3,440
February	211	-	73.7	†2,063	4,090
March	152	27	109	3,384	6,710
April	1,440	27	107	3,218	6,380
May	472	27	141	4,368	8,660
June	1,290	77	588	17,641	34,990
July	3,200	90	552	17,127	33,970
August	592	27	125	3,888	7,710
September	1,440	20	129	3,880	7,700
Water year 1918	3,200	20	174	63,661	126,300

Yearly discharge of San Rafael River near Green River, Utah, 1910-18

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1910	345	250,100	346	250,700
1911	217	157,200	222	160,800
1912	260	188,600	272	197,600
1913	‡265	191,500	234	169,100
1914	364	263,800	365	263,900
1915	139	100,500	133	96,560
1916	261	188,100	320	232,400
1917	438	317,400	370	267,600
1918	174	126,300	-	-

SAN JUAN RIVER NEAR BLUFF, UTAH

Location.- Lat. 37°09', long. 109°52', in SE¼ sec. 7, T. 42 S., R. 19 E., 1,600 feet downstream from Gypsum Creek, 1,800 feet upstream from Goodridge Bridge, 20 miles southwest of Bluff, and 114 miles upstream from mouth, since Feb. 19, 1927.
1914-17: About 1,700 feet downstream near Goodridge Bridge.

Drainage area.- 23,900 square miles.

Records available.- October 1914 to September 1917 and March 1927 to September 1938.

Average discharge.- 14 years (water years, 1915-17, 1928-38), 3,000 second-feet.

Extremes.- 1914-17, 1927-38: Maximum discharge, about 70,000 second-feet Sept. 10, 1927 (gage height, 32.0 feet), from rating curve extended above 15,000 second-feet; no flow July 3-13, 1934 (gage height of zero flow about 2.5 feet).
When present gage was located in 1926 evidence of a higher flood in earlier years was found in sand deposits near gage site at a gage height of 36 feet, present datum; discharge about 85,000 second-feet from extension of 1927 rating. Known high flood crests occurred about Oct. 7, 1911, and June 18, 1884.

Gage.- Water-stage recorder on left bank 1,600 feet downstream from Gypsum Creek and 1,800 feet upstream from Goodridge Bridge, since Mar. 16, 1927. Temporary staff gage at about same site and datum, Feb. 19 to Mar. 15, 1927.
Oct. 30, 1914, to Mar. 3, 1916, chain gage on right bank 100 feet upstream from Goodridge Bridge read to half-tenths, generally once daily; independent datum.
Mar. 4, 1916, to Sept. 30, 1917, chain gage on right bank 150 feet upstream from bridge read to half-tenths or hundredths once daily; independent datum. (See pl. 7, A.)

Remarks.- Records good, except those above 20,000 second-feet and those for periods of ice effect, which are fair, and those roughly estimated for Oct. 1-29, 1914, and Jan. 5 to Feb. 5, 1937, which are probably poor. No more than slight ice-effect during most winters. Station is below all diversions from San Juan River.

Monthly summary of discharge of San Juan River near Bluff, Utah, 1914-17, 1927-38

(† Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1914	-	-	3,600	a111,600	221,400
November	2,360	1,140	1,578	47,330	93,880
December	1,210	505	1,018	31,550	62,580
January 1915	2,060	630	1,014	31,440	62,360
February	4,820	1,080	2,328	65,190	129,300
March	4,980	960	2,230	69,120	137,100
April	13,900	3,740	8,037	241,120	478,300
May	13,100	4,980	9,269	287,330	569,900
June	12,900	4,820	10,090	302,800	600,600
July	21,900	2,610	6,485	201,040	398,800
August	3,880	705	1,663	51,560	102,300
September	5,830	380	1,050	31,505	62,490
Water year 1915	21,900	380	4,032	1,471,585	2,919,000
October 1915	1,960	552	941	29,167	57,850
November	824	552	667	b20,019	39,710
December	793	388	637	b19,732	39,140
Calendar year 1915	21,900	380	3,699	1,350,023	2,678,000
January 1916	5,790	505	1,307	b40,530	80,390
February	2,390	854	1,401	40,643	80,610
March	16,200	1,340	6,207	192,420	381,700
April	11,000	4,850	7,566	226,990	450,200
May	15,500	5,470	9,338	289,490	574,200
June	14,400	7,130	10,500	315,150	625,100
July	7,670	2,800	5,161	159,990	317,300
August	14,500	2,290	7,123	220,800	438,000
September	5,790	1,740	2,589	77,660	154,000
Water year 1916	16,200	388	4,461	1,632,591	3,238,000
October 1916	28,300	1,740	7,847	243,260	482,500
November	2,010	990	c1,376	41,280	c81,880
December	1,130	199	669	20,727	41,110
Calendar year 1916	28,300	199	5,106	1,868,940	3,707,000
January 1917	990	350	694	21,517	42,680
February	2,800	410	1,253	35,078	69,580
March	3,610	758	1,371	42,513	84,320
April	12,400	2,100	5,915	177,440	351,900
May	14,700	5,630	9,108	282,350	560,000
June	18,700	6,620	13,980	419,330	831,700
July	14,700	5,000	8,475	262,720	521,100
August	5,310	1,660	2,878	89,220	177,000
September	2,490	1,340	1,868	56,040	111,200
Water year 1917	28,300	199	4,634	1,691,475	c3,355,000

a Discharge October 1-29 estimated by comparison with discharge of San Juan River at Farmington, N. Mex.; record for October and resulting water year not previously published.
b Gage read only about every other day, discharge interpolated for days of no gage reading.
c Revised.

Monthly summary of discharge of San Juan River near Bluff, Utah, 1914-17, 1927-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
March 1927 d/	4,500	1,000	2,050	†63,550	126,000
April	11,200	2,500	6,092	182,770	362,500
May	16,000	5,190	11,020	341,530	677,400
June	52,000	5,970	10,070	302,140	599,300
July	36,400	1,840	6,558	203,300	403,200
August	3,820	870	†1,991	61,730	122,400
September	32,900	1,040	11,870	356,050	706,200
October 1927	6,010	1,640	3,179	†98,540	195,500
November	4,350	1,360	2,092	62,760	124,500
December	1,400	640	971	†30,104	59,710
January 1928	-	-	972	†30,122	59,750
February	4,400	960	1,473	42,722	84,740
March	3,920	1,100	2,159	66,920	132,700
April	4,310	1,740	2,610	78,310	155,300
May	11,200	3,910	6,829	211,700	419,900
June	11,800	2,420	5,181	155,420	308,300
July	2,720	802	1,436	44,504	88,270
August	2,020	320	895	27,759	55,060
September	1,580	395	713	21,377	42,400
Water year 1928	11,800	320	2,378	870,238	1,726,000
October 1928	4,130	590	979	30,347	60,190
November	5,360	876	1,384	41,528	82,370
December	1,350	188	754	23,381	46,380
Calendar year 1928	11,800	188	2,115	774,090	1,535,000
January 1929	1,050	241	613	18,996	37,680
February	2,390	391	875	†24,503	48,600
March	6,230	726	2,460	76,252	151,200
April	14,000	3,070	5,652	169,550	336,300
May	14,000	5,210	9,515	294,970	585,100
June	12,600	4,640	8,579	257,380	510,500
July	14,600	1,680	3,891	120,630	239,300
August	38,300	2,530	9,335	289,370	574,000
September	21,500	2,250	7,379	221,360	439,100
Water year 1929	38,300	188	4,297	1,568,267	3,111,000
October 1929	4,300	1,350	2,201	68,220	135,300
November	1,320	791	1,068	32,025	63,520
December	930	229	672	20,840	41,340
Calendar year 1929	38,300	229	4,367	1,594,096	3,162,000
January 1930	834	240	476	14,768	29,290
February	2,180	601	1,262	35,323	70,060
March	2,130	757	1,247	38,643	76,650
April	7,200	1,270	4,438	133,150	264,100
May	10,600	2,100	4,400	136,400	270,500
June	10,400	1,730	5,718	171,530	340,200
July	5,660	664	2,597	80,522	159,700
August	15,800	501	4,022	124,667	247,300
September	812	287	435	13,042	25,870
Water year 1930	15,800	229	2,381	869,130	1,724,000
October 1930	1,190	400	557	17,263	34,240
November	830	427	554	16,608	32,940
December	659	-	410	†12,706	25,200
Calendar year 1930	15,800	-	2,177	794,622	1,576,000
January 1931	-	-	335	†10,400	20,630
February	1,560	526	905	25,345	50,270
March	1,220	405	616	19,082	37,850
April	2,350	606	1,327	39,797	78,940
May	5,400	2,180	3,388	105,040	208,300
June	5,640	1,360	3,334	100,020	198,400
July	4,740	83	1,163	36,053	71,510
August	3,480	95	854	26,466	52,490
September	3,960	62	1,290	38,694	76,750
Water year 1931	5,640	62	1,226	447,474	887,500

d Record for full month not previously published.

Monthly summary of discharge of San Juan River near Bluff, Utah, 1914-17, 1927-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	6,800	880	2,546	78,932	156,600
November	4,380	192	1,135	34,061	67,560
December	1,670	220	740	22,955	45,530
Calendar year 1931	6,800	62	1,471	536,845	1,065,000
January 1932	835	145	572	17,720	35,150
February	15,700	508	3,604	104,525	207,300
March	5,800	1,820	3,354	103,980	206,200
April	11,300	4,530	7,910	237,290	470,700
May	16,100	4,680	10,410	322,780	640,200
June	11,700	5,480	9,268	278,030	551,500
July	7,500	1,870	4,157	128,860	255,600
August	16,500	547	3,490	108,176	214,600
September	4,840	541	1,629	48,859	96,910
Water year 1932	16,500	145	4,061	1,486,168	2,948,000
October 1932	1,620	625	‡803	24,878	49,340
November	769	524	636	19,078	37,840
December	674	26	433	†13,415	26,610
Calendar year 1932	16,500	26	3,846	1,407,591	2,792,000
January 1933	800	251	471	†14,587	28,930
February	2,030	600	866	†24,260	48,120
March	2,490	649	1,191	36,914	73,220
April	1,770	748	1,093	32,780	65,020
May	8,400	776	2,759	85,521	169,600
June	11,900	3,180	7,378	221,330	439,000
July	5,000	619	2,158	66,896	132,700
August	3,180	157	647	20,065	39,800
September	7,320	82	2,214	66,428	131,800
Water year 1933	11,900	26	1,715	626,152	1,242,000
October 1933	5,800	720	1,613	49,997	99,170
November	1,140	474	619	18,582	36,860
December	1,920	425	666	20,635	40,930
Calendar year 1933	11,900	82	1,803	657,995	1,305,000
January 1934	842	316	567	17,563	34,840
February	932	442	576	16,135	32,000
March	948	452	695	21,542	42,730
April	3,660	631	1,829	54,880	108,900
May	4,230	1,000	2,456	76,130	151,000
June	2,730	5	577	17,307	34,330
July	1,220	0	264	8,197	16,260
August	4,920	45	460	14,269	28,300
September	3,120	85	615	18,457	36,610
Water year 1934	5,800	0	914	333,694	661,900
October 1934	850	192	354	10,967	21,750
November	508	125	345	10,341	20,510
December	1,060	100	438	†13,569	26,910
Calendar year 1934	4,920	0	765	279,357	554,100
January 1935	1,820	100	653	†20,232	40,130
February	1,260	508	898	25,140	49,860
March	2,370	547	1,241	38,480	76,320
April	6,120	2,490	4,264	127,920	253,700
May	11,300	3,060	6,073	188,270	373,400
June	18,500	6,800	12,780	383,340	760,300
July	8,590	1,820	4,851	150,390	298,300
August	3,520	880	2,069	64,124	127,200
September	12,500	452	2,266	67,982	134,800
Water year 1935	18,500	100	3,016	1,100,755	2,183,000
October 1935	2,310	720	1,115	34,569	68,570
November	842	601	692	20,764	41,180
December	694	312	520	16,120	31,970
Calendar year 1935	18,500	100	3,116	1,137,331	2,256,000
January 1936	880	370	590	18,300	36,300
February	1,820	436	872	25,280	50,140
March	3,800	734	2,236	69,309	137,500
April	8,220	1,530	5,305	159,160	315,700
May	11,500	4,080	6,905	214,050	424,600
June	7,320	1,000	3,212	96,350	191,100
July	1,920	344	664	20,591	40,840
August	7,500	326	2,530	78,433	155,600
September	6,970	1,010	2,309	69,270	137,400
Water year 1936	11,500	312	2,246	822,196	1,631,000

Monthly summary of discharge of San Juan River near Bluff, Utah, 1914-17, 1927-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	4,180	649	1,080	33,473	66,390
November	8,490	872	1,206	36,188	71,870
December	1,010	482	788	24,289	48,080
Calendar year 1936	11,800	326	2,308	844,677	1,676,000
January 1937	-	-	403	a12,487	24,770
February	7,200	1,000	2,530	a70,840	140,500
March	7,680	1,600	3,139	97,300	193,000
April	16,500	2,880	9,018	270,540	536,600
May	14,900	5,800	10,960	339,850	674,100
June	2,970	2,940	5,572	167,160	331,600
July	8,970	836	2,661	82,478	163,600
August	2,250	130	626	19,387	38,410
September	10,200	138	1796	23,871	47,360
Water year 1937	16,500	130	3,227	1,177,895	2,336,000
October 1937	14,000	589	1,453	45,065	89,370
November	776	502	613	18,699	36,490
December	769	450	597	18,811	36,780
Calendar year 1937	16,500	130	3,194	1,165,856	2,313,000
January 1938	850	523	592	18,388	36,410
February	1,390	502	850	23,787	47,180
March	9,020	1,450	3,047	94,460	187,400
April	13,500	1,790	5,415	162,440	321,700
May	17,000	3,250	7,899	244,880	485,700
June	15,800	8,480	11,480	344,380	683,000
July	16,500	980	5,772	116,940	231,900
August	2,890	198	803	24,800	49,370
September	8,820	872	3,377	101,316	201,000
Water year 1938	17,000	198	3,407	1,243,383	2,466,000

a Ice effect Jan. 5 to Feb. 5, discharge roughly estimated from record of discharge at Shiprock, N. Mex., and weather records.

Yearly discharge of San Juan River near Bluff, Utah, 1915-17, 1928-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1915	4,032	2,919,000	3,699	2,678,000
1916	4,461	3,238,000	5,106	3,707,000
1917	4,634	c3,355,000	-	-
1928	2,378	1,726,000	2,115	1,535,000
1929	4,297	3,111,000	4,367	3,162,000
1930	2,381	1,724,000	2,177	1,576,000
1931	1,226	887,500	1,471	1,065,000
1932	4,061	2,948,000	3,946	2,792,000
1933	1,715	1,242,000	1,803	1,305,000
1934	914	661,900	765	554,100
1935	3,016	2,183,000	3,116	2,256,000
1936	2,246	1,631,000	2,308	1,676,000
1937	3,227	2,336,000	3,194	2,313,000
1938	3,407	2,466,000	-	-

COLORADO RIVER AT LEES FERRY, ARIZ.

Location.- Lat. 36°51'45", long. 111°36'15", in NE¼SE¼ sec. 13, T. 40 N., R. 7 E., at head of Marble Gorge, at Lees Ferry, a quarter of a mile upstream from Paria River, 62 miles upstream from Little Colorado River, 79 miles downstream from San Juan River, and 355 miles upstream from Boulder Dam.

Drainage area.- 107,900 square miles.

Records available.- *June* 1921 to September 1938. Also calendar year estimates, 1895-1910, and monthly estimates, January 1911 to May 1921.

Average discharge.- 17 years (water years, 1922-38), 17,800 second-feet. 43 years (calendar years, 1895-1937, 1895-1921 estimated), 19,560 second-feet.

Extremes.- 1921-38: Maximum discharge, 220,000 second-feet June 18, 1921 (gage height, 26.5 feet, present datum, from floodmarks near present gage), from rating curve extended above 120,000 second-feet by comparison with rating for station near Grand Canyon. Minimum discharge, 750 second-feet Dec. 27, 1924 (gage height, 4.2 feet).

Maximum discharge known, 300,000 *second-feet* about *July* 7, 1884 (*gage height*, 31.5 feet, present site and datum, referenced from floodmark at mouth of Paria River), from rating curve extended above 220,000 second-feet.

Gage.- Water-stage recorder on left bank, on prominent rock point at head of Marble Gorge, and at head of Paria Rapids, a quarter of a mile upstream from mouth of Paria River, at Lees Ferry, since Jan. 19, 1923. Zero of gage is 3,106.16 feet above mean sea level (general adjustment of 1929), or 3,106.35 feet above mean sea level (general adjustment of 1912).

May 8 to June 12, 1921, staff gage at same point as No. 1 gage; read to feet and inches twice daily; damaged by flood to such extent that readings could not be reduced satisfactorily to datum of later gage.

June 13-23, 1921, water over top of existing gage; stages recorded by setting stakes later referred by levels to datum of No. 1 gage.

June 24 to Sept. 30, 1921, staff gage (No. 1 gage) on right bank about 400 feet upstream from present gage and at datum 3.56 feet lower; read to feet and inches twice daily.

Aug. 14, 1921, to Jan. 19, 1923, staff gage (Dugway gage) 10 feet upstream from present gage and at same datum; read to half-tenths twice daily.

Both No. 1 gage and Dugway gage maintained for several years after their periods of regular use, and read *simultaneously* at *appropriate times* and *stages* for *determination* of curves of relation to gage heights at recording gage for use in review and revisions of discharge made in 1938.

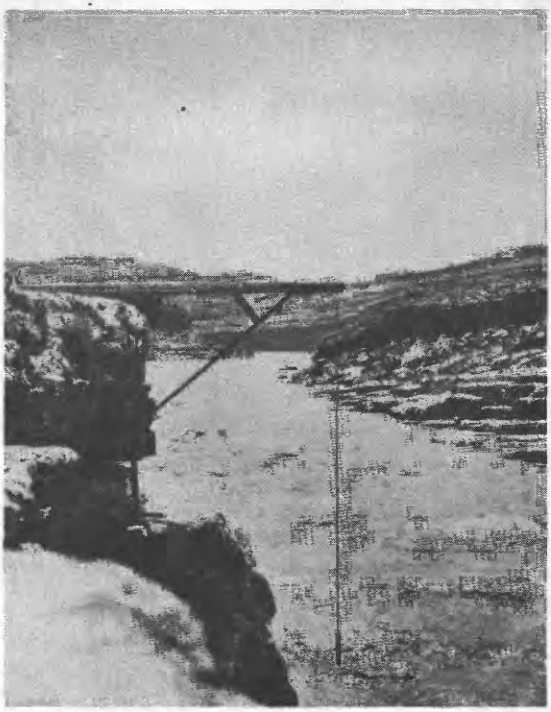
Cooperation.- Station installed and operated until Aug. 31, 1923 by Southern California Edison Company. The Geological Survey acted in an advisory capacity, furnished the current-meter equipment, and made the studies and computations of records.

Remarks.- Records for 1921-23 are good and for 1924-38 are excellent, except those above 150,000 second-feet which are fair. During the 18 years of operation, 2,271 discharge measurements have been made at such times and at such stages of river as to give the most accurate records. Equipment and methods of measuring discharge specially adapted to lower Colorado River were developed during 1921-24, and have been used exclusively since 1924. Slightly unstable condition of Paria Rapids just downstream from gage causes minor variations in stage-discharge relation; moderate reversal in the station rating curve occurs in the range from 60,000 to 80,000 second-feet, above and below which rating has normal curvature. Ratings for the higher stages have been influenced to some slight extent by comparison with the discharge at the Grand Canyon station where physical conditions are more favorable for permanence of stage-discharge relation.

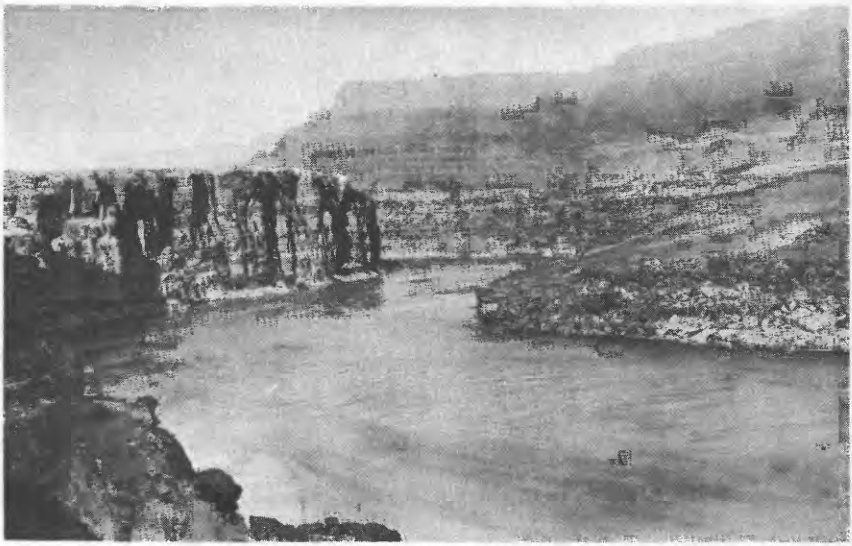
During nearly every winter for one or more brief periods, principally in January, diurnal collection of floating ice on Paria Rapids caused some backwater at the gage each morning, and extending through the day in colder weather. On only one occasion during the period of records, jammed ice was consolidated and formed a heavy ice cover at the gage for several days early in January 1925, and there was daily ice-effect Dec. 24, 1924, to Feb. 6, 1925. For all such periods, daily discharge has been computed from whatever unaffected gage heights occurred during part of the day at Lees Ferry, from frequent discharge measurements, and from hydrographic comparison with discharge at the Grand Canyon station which was entirely free from ice effect, giving consideration to discharge of Paria and Little Colorado rivers. For occasional other brief periods of faulty gage-height record or rating, daily discharge has been computed from similar hydrographic studies.

Diversions for irrigation above the station are principally for use within Colorado River Basin, but there is some diversion outside the basin, as indicated in descriptions of stations nearer the headwaters. This record, supplemented by that of Paria River near Lees Ferry, shows discharge passing that point in Colorado River termed "Lee Ferry" in the Colorado River Compact. (See pl. 7, B.)

In connection with preparation of Water-Supply Paper 556, Water Power and Flood Control of Colorado River below Green River, Utah, a study was made of available runoff records in Colorado River basin above Lees Ferry, and estimates based thereon were published for 1895-1923. Those estimates, except for periods covered by actual records, are here presented without change except for revision of estimates for 1898, 1899, 1912, and 1913, based on revision of records of Green River at Green River, Utah, Colorado River at Fruita, Colo., and Gunnison River near Grand Junction, Colo., from which they were originally derived in part.



A. SAN JUAN RIVER NEAR BLUFF, UTAH.
Chain gage used in 1917. Photograph by R. P. Flagel.



B. COLORADO RIVER 1 MILE BELOW PARIA RIVER.
The "Lee Ferry" of the Colorado River Compact. View downstream. Photograph by E. C. LaRue.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-38

(† Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1911	-	-	6,130	-	377,000
February	-	-	7,810	-	434,000
March	-	-	16,400	-	1,010,000
April	-	-	20,200	-	1,200,000
May	-	-	48,600	-	2,990,000
June	-	-	62,300	-	3,710,000
July	-	-	34,000	-	2,090,000
August	-	-	9,140	-	562,000
September	-	-	6,870	-	409,000
October 1911	-	-	18,400	-	1,130,000
November	-	-	7,430	-	442,000
December	-	-	5,740	-	353,000
Calendar year 1911	-	-	20,310	-	14,710,000
January 1912	-	-	5,630	-	346,000
February	-	-	5,680	-	327,000
March	-	-	8,750	-	538,000
April	-	-	15,000	-	891,000
May	-	-	57,200	-	3,520,000
June	-	-	96,500	-	5,740,000
July	-	-	44,100	-	2,710,000
August	-	-	16,800	-	1,030,000
September	-	-	8,890	-	529,000
Water year 1912	-	-	24,180	-	17,560,000
October 1912	-	-	10,100	-	622,000
November	-	-	8,960	-	533,000
December	-	-	4,860	-	a299,000
Calendar year 1912	-	-	23,530	-	a17,080,000
January 1913	-	-	5,740	-	a353,000
February	-	-	5,600	-	a311,000
March	-	-	8,460	-	a520,000
April	-	-	29,900	-	1,780,000
May	-	-	48,500	-	2,980,000
June	-	-	46,200	-	2,750,000
July	-	-	24,600	-	1,510,000
August	-	-	8,000	-	492,000
September	-	-	9,980	-	594,000
Water year 1913	-	-	17,600	-	12,740,000
October 1913	-	-	9,270	-	570,000
November	-	-	8,100	-	482,000
December	-	-	4,830	-	297,000
Calendar year 1913	-	-	17,460	-	a12,640,000
January 1914	-	-	5,610	-	345,000
February	-	-	7,420	-	412,000
March	-	-	13,800	-	846,000
April	-	-	27,600	-	1,640,000
May	-	-	74,300	-	4,570,000
June	-	-	97,000	-	5,770,000
July	-	-	36,900	-	2,270,000
August	-	-	14,900	-	914,000
September	-	-	8,760	-	521,000
Water year 1914	-	-	25,740	-	18,640,000
October 1914	-	-	13,500	-	831,000
November	-	-	7,920	-	471,000
December	-	-	5,040	-	310,000
Calendar year 1914	-	-	26,110	-	18,900,000
January 1915	-	-	4,730	-	291,000
February	-	-	6,750	-	375,000
March	-	-	8,640	-	531,000
April	-	-	25,700	-	1,530,000
May	-	-	39,500	-	2,430,000
June	-	-	52,800	-	3,140,000
July	-	-	22,800	-	1,400,000
August	-	-	6,730	-	414,000
September	-	-	6,420	-	382,000
Water year 1915	-	-	16,720	-	12,100,000

a Revised.

Note.- Monthly mean discharge January 1911 to May 1921 computed from estimated monthly acre-feet, and yearly mean discharge computed from yearly acre-feet.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	-	-	7,690	-	473,000
November	-	-	6,570	-	391,000
December	-	-	5,120	-	315,000
Calendar year 1915	-	-	16,120	-	11,670,000
January 1916	-	-	6,130	-	377,000
February	-	-	7,080	-	407,000
March	-	-	23,100	-	1,420,000
April	-	-	31,300	-	1,860,000
May	-	-	58,900	-	3,620,000
June	-	-	69,700	-	4,150,000
July	-	-	29,900	-	1,840,000
August	-	-	24,100	-	1,480,000
September	-	-	10,100	-	603,000
Water year 1916	-	-	23,330	-	16,940,000
October 1916	-	-	21,800	-	1,340,000
November	-	-	7,260	-	432,000
December	-	-	5,660	-	348,000
Calendar year 1916	-	-	24,630	-	17,880,000
January 1917	-	-	4,050	-	249,000
February	-	-	6,100	-	339,000
March	-	-	8,180	-	503,000
April	-	-	27,200	-	1,620,000
May	-	-	62,100	-	3,820,000
June	-	-	121,500	-	7,340,000
July	-	-	62,000	-	3,810,000
August	-	-	16,800	-	1,030,000
September	-	-	10,300	-	613,000
Water year 1917	-	-	29,470	-	21,330,000
October 1917	-	-	7,120	-	438,000
November	-	-	6,910	-	411,000
December	-	-	6,620	-	407,000
Calendar year 1917	-	-	28,280	-	20,470,000
January 1918	-	-	5,940	-	365,000
February	-	-	6,570	-	365,000
March	-	-	10,600	-	653,000
April	-	-	17,000	-	1,010,000
May	-	-	45,200	-	2,780,000
June	-	-	82,000	-	4,880,000
July	-	-	27,500	-	1,690,000
August	-	-	8,490	-	522,000
September	-	-	8,940	-	532,000
Water year 1918	-	-	19,410	-	14,050,000
October 1918	-	-	7,950	-	489,000
November	-	-	7,600	-	452,000
December	-	-	5,580	-	343,000
Calendar year 1918	-	-	19,450	-	14,080,000
January 1919	-	-	4,360	-	268,000
February	-	-	4,990	-	277,000
March	-	-	11,100	-	681,000
April	-	-	23,700	-	1,410,000
May	-	-	49,800	-	3,060,000
June	-	-	33,300	-	1,980,000
July	-	-	15,900	-	978,000
August	-	-	7,090	-	436,000
September	-	-	5,980	-	356,000
Water year 1919	-	-	14,820	-	10,730,000
October 1919	-	-	5,610	-	345,000
November	-	-	6,100	-	363,000
December	-	-	5,250	-	323,000
Calendar year 1919	-	-	14,470	-	10,480,000
January 1920	-	-	6,730	-	414,000
February	-	-	9,420	-	542,000
March	-	-	11,500	-	710,000
April	-	-	18,500	-	1,100,000
May	-	-	91,700	-	5,640,000
June	-	-	103,500	-	6,160,000
July	-	-	33,300	-	2,050,000
August	-	-	13,400	-	823,000
September	-	-	7,110	-	423,000
Water year 1920	-	-	26,030	-	18,890,000

Note.- Monthly mean discharge January 1911 to May 1921 computed from estimated monthly acre-feet, and yearly mean discharge computed from yearly acre-feet.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	-	-	7,730	-	475,000
November	-	-	8,180	-	487,000
December	-	-	5,530	-	340,000
Calendar year 1920	-	-	26,400	-	19,160,000
January 1921	-	-	5,680	-	349,000
February	-	-	7,200	-	400,000
March	-	-	14,100	-	865,000
April	-	-	15,900	-	944,000
May	-	-	65,900	-	4,050,000
June b/	214,000	-	133,600	†4,009,000	7,952,000
July	66,200	25,500	35,940	1,114,000	2,210,000
August	64,100	14,800	26,570	823,600	1,634,000
September	25,200	6,830	12,550	376,370	746,500
Water year 1921	-	-	28,250	-	20,450,000
October 1921	11,800	6,130	6,951	215,490	427,400
November	7,650	6,450	6,976	209,280	415,100
December	11,800	5,020	7,288	225,920	448,100
Calendar year 1921	-	-	28,230	-	20,440,000
January 1922	10,000	3,700	5,675	c175,930	349,000
February	10,900	4,900	7,870	220,360	437,100
March	31,200	6,130	14,720	456,360	905,200
April	42,000	12,500	19,460	583,900	1,158,000
May	116,000	42,500	72,340	2,242,400	4,448,000
June	114,000	55,400	86,130	2,584,000	5,125,000
July	52,100	9,930	23,390	725,030	1,438,000
August	19,300	8,180	11,450	354,930	704,000
September	11,700	4,790	7,067	212,010	420,500
Water year 1922	116,000	3,700	22,480	8,205,610	16,280,000
October 1922	5,170	4,420	4,698	145,630	288,900
November	7,300	5,170	6,701	201,040	398,800
December	7,130	4,920	6,449	199,920	396,500
Calendar year 1922	116,000	3,700	22,200	8,101,510	16,070,000
January 1923	6,620	5,170	6,060	187,860	372,600
February	7,530	5,060	6,095	170,660	338,500
March	7,910	6,440	7,266	225,240	446,800
April	32,100	8,690	21,430	642,790	1,275,000
May	96,200	21,400	58,690	1,819,300	3,609,000
June	94,200	59,400	76,640	2,299,100	4,560,000
July	58,800	24,000	37,800	1,171,800	2,324,000
August	32,100	14,100	21,930	679,800	1,348,000
September	47,800	8,300	14,760	442,920	878,500
Water year 1923	96,200	4,420	22 430	8,186,060	16,240,000
October 1923	13,700	10,100	11,820	366,300	726,500
November	19,600	8,100	10,850	325,420	645,500
December	9,150	4,680	6,850	212,360	421,200
Calendar year 1923	96,200	4,680	23,410	8,543,550	16,950,000
January 1924	7,910	3,160	5,028	c155,880	309,200
February	11,300	5,570	8,768	254,270	504,300
March	10,200	7,000	8,220	254,820	505,400
April	44,500	8,060	27,470	824,080	1,635,000
May	66,100	24,600	49,680	1,540,100	3,055,000
June	72,800	32,200	52,540	1,576,100	3,126,000
July	30,400	6,650	16,200	502,230	996,200
August	8,100	2,750	4,848	150,290	298,100
September	9,640	2,290	4,031	120,940	239,900
Water year 1924	72,800	2,290	17,170	6,282,790	12,460,000
October 1924	6,890	3,740	5,794	179,600	356,200
November	6,890	6,220	6,550	196,510	389,800
December	6,250	1,000	4,433	c137,430	272,600
Calendar year 1924	72,800	1,000	16,100	5,892,250	11,690,000
January 1925	5,800	1,500	4,206	c130,400	258,600
February	8,500	6,000	7,209	c201,850	400,400
March	16,200	7,260	9,788	303,430	601,800
April	33,400	15,400	21,740	652,100	1,293,000
May	49,300	19,500	34,550	1,071,200	2,125,000
June	52,300	30,600	40,090	1,202,800	2,386,000
July	34,200	13,500	23,360	724,200	1,436,000
August	20,800	8,810	11,860	367,610	729,100
September	29,200	11,100	17,870	536,100	1,063,000
Water year 1925	52,300	1,000	15,630	5,703,230	11,310,000

b Discharge June 1-12 estimated; record for full month not previously published.
c Daily discharge partly estimated.

Note.- Monthly mean discharge January 1911 to May 1921 computed from estimated monthly acre-feet, and yearly mean discharge computed from yearly acre-feet.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	30,600	10,500	16,260	504,100	999,900
November	12,200	8,190	10,200	305,950	606,800
December	8,720	5,440	7,229	224,090	444,500
Calendar year 1925	52,300	1,500	17,050	6,223,830	12,340,000
January 1926	6,870	4,950	5,822	c180,480	358,000
February	6,910	5,060	6,305	176,580	350,200
March	15,800	6,020	10,400	322,360	639,400
April	49,000	11,300	26,510	795,400	1,578,000
May	84,000	32,000	54,580	1,692,000	3,356,000
June	78,500	28,500	57,580	1,730,300	3,432,000
July	35,800	11,300	22,480	696,800	1,382,000
August	12,200	4,930	8,699	269,670	534,900
September	8,620	3,150	4,952	148,550	294,600
Water year 1926	84,000	3,150	19,300	7,046,280	13,980,000
October 1926	9,000	5,080	6,953	215,550	427,500
November	6,510	5,020	5,575	167,250	331,700
December	11,300	2,500	6,131	c190,070	377,000
Calendar year 1926	84,000	2,500	18,040	6,585,010	13,060,000
January 1927	7,060	2,700	5,438	c168,570	334,400
February	11,200	5,320	6,946	194,480	385,700
March	11,400	7,550	9,776	303,050	601,100
April	35,100	13,100	20,380	611,500	1,213,000
May	89,300	38,200	62,820	1,947,400	3,863,000
June	91,200	46,200	61,220	1,836,600	3,643,000
July	119,000	17,100	39,120	1,212,600	2,405,000
August	25,100	8,750	15,050	466,650	925,600
September	110,000	10,400	34,180	1,025,400	2,034,000
Water year 1927	119,000	2,500	22,850	8,339,120	16,540,000
October 1927	22,400	10,800	15,210	471,500	935,200
November	21,200	10,000	12,330	370,000	733,900
December	10,000	4,100	7,154	e221,760	439,900
Calendar year 1927	119,000	2,700	24,190	8,829,510	17,510,000
January 1928	9,460	6,570	7,591	235,320	466,800
February	11,200	7,010	7,994	231,840	459,800
March	24,600	7,200	12,210	378,470	750,700
April	28,600	10,300	16,530	496,000	983,800
May	104,000	34,900	70,580	2,188,100	4,340,000
June	113,000	38,400	62,230	1,866,900	3,703,000
July	41,500	14,100	24,830	769,800	1,527,000
August	14,600	6,750	10,120	313,820	622,500
September	9,160	4,650	5,792	173,760	344,600
Water year 1928	113,000	4,100	21,090	7,717,270	15,310,000
October 1928	22,800	4,950	9,843	305,140	605,200
November	17,800	7,460	9,527	285,820	566,900
December	8,690	2,700	5,553	c172,140	341,400
Calendar year 1928	113,000	2,700	20,270	7,417,110	14,710,000
January 1929	6,360	4,400	5,343	c165,640	328,500
February	8,230	4,620	6,172	172,820	342,800
March	34,700	6,360	14,950	463,580	919,500
April	43,200	13,500	28,130	843,900	1,674,000
May	111,000	25,100	66,190	2,051,900	4,070,000
June	98,200	58,000	80,750	2,422,600	4,806,000
July	54,800	21,000	32,610	1,011,000	2,005,000
August	65,500	12,400	30,750	953,200	1,891,000
September	41,100	14,900	27,540	826,200	1,639,000
Water year 1929	111,000	2,700	26,500	9,673,940	19,190,000
October 1929	22,100	10,400	14,990	464,600	921,500
November	10,700	6,820	9,388	281,650	558,600
December	8,660	4,100	7,086	e219,670	435,700
Calendar year 1929	111,000	4,100	27,060	9,876,760	19,590,000
January 1930	5,400	2,900	4,794	c148,620	294,800
February	15,200	5,150	8,667	242,670	481,300
March	12,600	7,790	9,253	286,840	568,900
April	45,200	8,810	28,650	859,560	1,705,000
May	51,100	20,200	32,140	995,400	1,976,000
June	71,400	27,300	51,550	1,546,500	3,067,000
July	24,900	13,000	17,250	534,700	1,061,000
August	45,000	10,600	23,770	736,800	1,461,000
September	13,800	5,030	8,744	262,320	520,300
Water year 1930	71,400	2,900	18,030	6,580,330	13,050,000

e Daily discharge partly estimated.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-36--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	10,600	7,900	8,911	276,250	547,900
November	8,960	4,580	7,105	213,090	422,700
December	5,720	3,100	4,669	c144,750	287,100
Calendar year 1930	71,400	2,900	17,180	6,248,480	12,390,000
January 1931	5,040	3,280	4,264	c132,170	262,200
February	8,040	5,130	6,566	183,850	364,700
March	9,380	5,720	6,937	215,040	426,600
April	14,800	6,100	9,478	284,370	564,000
May	35,500	11,800	18,790	582,200	1,156,000
June	31,800	12,500	25,260	497,900	1,244,000
July	15,900	2,070	7,975	225,510	447,300
August	8,180	2,480	5,998	122,980	243,700
September	15,100	2,050	4,508	139,070	287,900
Water year 1931	33,500	2,050	8,807	3,214,460	6,376,000
October 1931	16,200	5,600	8,116	251,650	499,100
November	9,380	5,340	6,466	176,970	350,800
December	6,450	1,900	4,046	c126,060	250,000
Calendar year 1931	33,500	1,600	8,589	3,134,970	6,218,000
January 1932	5,800	3,600	4,405	c136,540	270,800
February	24,100	3,630	9,650	270,860	555,100
March	16,300	7,640	10,920	338,560	671,500
April	39,500	11,700	27,510	825,300	1,637,000
May	99,800	26,000	64,650	2,004,300	3,975,000
June	70,800	50,100	60,780	1,823,700	3,617,000
July	63,700	14,600	32,710	1,013,900	2,011,000
August	49,500	6,460	15,060	466,780	925,800
September	22,300	4,370	8,156	244,690	485,300
Water year 1932	99,800	1,800	21,010	7,688,210	15,250,000
October 1932	6,820	4,710	5,437	168,540	334,300
November	8,680	5,940	6,342	190,260	377,400
December	6,350	2,360	4,410	c136,720	271,200
Calendar year 1932	99,800	2,360	20,840	7,629,150	15,130,000
January 1933	5,390	2,900	4,392	c136,160	270,100
February	6,750	2,400	4,548	c127,340	252,600
March	9,940	6,500	8,089	250,750	497,400
April	10,300	6,450	8,323	c249,690	495,300
May	33,300	10,800	23,340	723,500	1,435,000
June	79,900	36,400	66,760	2,002,700	3,972,000
July	32,400	6,450	18,100	561,070	1,113,000
August	9,750	2,900	5,484	170,000	337,200
September	11,900	2,690	6,272	188,170	373,200
Water year 1933	79,900	2,360	13,440	4,904,900	9,729,000
October 1933	10,100	4,160	6,083	188,570	374,000
November	6,750	4,140	4,982	149,450	296,400
December	7,860	3,680	5,150	159,650	316,700
Calendar year 1933	79,900	2,400	13,440	4,907,050	9,733,000
January 1934	6,290	3,790	4,979	154,340	306,100
February	6,220	4,630	5,418	151,690	300,900
March	6,160	4,900	5,415	c167,850	332,900
April	13,900	4,900	7,620	228,590	453,400
May	24,700	13,200	17,830	552,800	1,096,000
June	18,300	2,810	8,571	257,120	510,000
July	2,950	1,450	2,123	65,810	130,500
August	6,020	1,110	2,068	64,120	127,200
September	4,390	1,440	2,233	66,980	132,900
Water year 1934	24,700	1,110	6,046	2,206,970	4,377,000
October 1934	3,240	2,090	2,471	76,590	151,900
November	3,760	2,370	3,007	90,200	178,900
December	4,340	2,590	3,697	114,610	227,300
Calendar year 1934	24,700	1,110	5,454	1,990,700	3,948,000
January 1935	5,890	2,490	4,124	c127,850	253,600
February	5,360	4,270	4,906	c137,380	272,500
March	6,490	4,420	5,488	170,120	337,400
April	16,400	6,680	10,960	328,690	651,900
May	47,500	12,600	22,790	706,600	1,402,000
June	103,800	44,900	67,280	2,018,300	4,003,000
July	46,000	10,700	23,930	741,700	1,471,000
August	10,700	6,490	8,463	262,360	520,400
September	20,000	3,890	7,139	c214,180	424,800
Water year 1935	103,800	2,090	13,670	4,988,580	9,895,000

c Daily discharge partly estimated.

Monthly summary of discharge of Colorado River at Lees Ferry, Ariz., 1911-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1935	10,600	4,270	5,638	174,780	346,700
November	5,710	4,860	5,355	160,640	318,600
December	6,360	2,920	4,301	133,320	264,400
Calendar year 1935	103,800	2,490	14,180	5,175,920	10,270,000
January 1936	4,940	3,410	4,234	131,260	260,400
February	6,900	4,220	5,469	158,590	314,600
March	8,490	5,330	7,443	230,740	457,700
April	51,400	6,260	22,260	667,740	1,324,000
May	74,600	41,700	58,400	1,810,500	3,591,000
June	67,900	25,400	44,510	1,335,300	2,649,000
July	32,100	8,640	16,310	505,760	1,003,000
August	27,200	7,200	14,060	435,730	864,300
September	18,400	4,780	9,095	272,860	541,200
Water year 1936	74,600	2,920	16,440	6,017,220	11,930,000
October 1936	7,150	4,650	5,638	174,780	346,700
November	9,710	6,310	7,420	222,610	441,500
December	6,400	3,750	5,112	158,470	314,300
Calendar year 1936	74,600	3,410	16,680	6,104,340	12,110,000
January 1937	5,670	1,560	3,208	c99,460	197,300
February	10,800	4,340	7,389	c206,880	410,300
March	19,200	7,150	11,350	351,970	698,100
April	44,800	9,910	25,420	762,510	1,512,000
May	82,000	25,700	56,520	1,752,000	3,475,000
June	65,700	29,200	39,530	1,185,800	2,352,000
July	32,800	11,100	21,450	665,100	1,319,000
August	11,900	3,920	6,509	201,770	400,200
September	13,300	3,590	6,780	203,410	403,500
Water year 1937	82,000	1,560	16,400	5,984,760	11,870,000
October 1937	22,600	4,770	7,358	228,100	452,400
November	7,210	5,870	6,326	189,780	376,400
December	8,300	4,700	6,221	c192,860	382,500
Calendar year 1937	82,000	1,560	16,550	6,039,640	11,980,000
January 1938	7,050	4,190	5,162	160,010	317,400
February	8,160	5,070	6,233	c174,530	346,200
March	20,500	6,370	12,760	395,620	784,200
April	65,700	8,890	27,070	811,950	1,610,000
May	80,700	26,000	54,580	1,691,900	3,356,000
June	100,300	58,700	78,420	2,352,500	4,666,000
July	64,500	11,600	28,000	868,000	1,722,000
August	12,100	4,360	8,158	252,890	501,600
September	24,500	5,100	15,120	453,510	899,500
Water year 1938	100,300	4,190	21,290	7,771,650	15,410,000

c Daily discharge partly estimated.

Yearly discharge of Colorado River at Lees Ferry, Ariz., 1895-1938

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1895	-	-	18,230	13,200,000
1896	-	-	17,630	12,800,000
1897	-	-	24,450	17,700,000
1898	-	-	14,090	a10,200,000
1899	-	-	24,030	a17,400,000
1900	-	-	17,540	12,700,000
1901	-	-	18,650	13,500,000
1902	-	-	12,220	8,850,000
1903	-	-	17,680	12,800,000
1904	-	-	16,670	12,100,000
1905	-	-	18,790	13,600,000
1906	-	-	24,030	17,400,000
1907	-	-	29,150	21,100,000
1908	-	-	15,290	11,100,000
1909	-	-	29,280	21,200,000
1910	-	-	17,270	12,500,000
1911	-	-	20,310	14,710,000
1912	24,180	17,560,000	23,530	a17,080,000
1913	17,600	12,740,000	17,460	a12,640,000
1914	25,740	18,640,000	26,110	18,900,000
1915	16,720	12,100,000	16,120	11,670,000
1916	23,330	16,940,000	24,630	17,880,000
1917	29,470	21,330,000	28,280	20,470,000
1918	19,410	14,050,000	19,450	14,080,000
1919	14,820	10,730,000	14,470	10,480,000
1920	26,030	18,890,000	26,400	19,160,000
1921	28,250	20,450,000	28,230	20,440,000
1922	22,480	16,280,000	22,200	16,070,000
1923	22,430	16,240,000	23,410	16,950,000
1924	17,170	12,460,000	16,100	11,690,000
1925	15,630	11,310,000	17,050	12,340,000
1926	19,300	13,980,000	18,040	13,060,000
1927	22,850	16,540,000	24,190	17,510,000
1928	21,090	15,310,000	20,270	14,710,000
1929	26,500	19,190,000	27,060	19,590,000
1930	18,030	13,050,000	17,120	12,390,000
1931	8,807	6,376,000	8,589	6,218,000
1932	21,010	15,250,000	20,840	15,130,000
1933	13,440	9,729,000	13,440	9,733,000
1934	6,046	4,377,000	5,454	3,948,000
1935	13,670	9,895,000	14,180	10,270,000
1936	16,440	11,930,000	16,680	12,110,000
1937	16,400	11,870,000	16,550	11,980,000
1938	21,290	15,410,000	-	-

a Revised.

Note.- Calendar year runoff estimated 1895-1910; yearly mean discharge computed therefrom.

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PARIA RIVER AT LEES FERRY, ARIZ.

Location.- Lat. 36°52'15", long. 111°36'30", in NW¼NE¼ sec. 13, T. 40 N., R. 7 E., half a mile upstream from mouth, and 1 mile northwest of Lees Ferry.

Drainage area.- 1,570 square miles (1940 revision).

Records available.- October 1923 to September 1938.

Average discharge.- 15 years (water years, 1924-38), 35.6 second-feet.

Extremes.- 1923-38: Maximum discharge, 16,100 second-feet Oct. 5, 1925 (gage height, 17.5 feet), from float measurement made on flood crest. No flow during parts of a few days in most winters when river farther upstream froze solid at night.

Gage.- Water-stage recorder on left bank half a mile upstream from mouth since Sept. 11, 1929. Zero of gage is 3,123.4 feet above mean sea level (general adjustment of 1929).
Oct. 13, 1925, to Sept. 11, 1929, vertical staff gage at same site and datum as recording gage; read to hundredths once a day with occasional omissions during low uniform flow and additional readings during floods.
Nov. 22, 1923, to Oct. 5, 1925, staff gage on right bank, 2,000 feet upstream; read to hundredths four times a week and oftener during floods.

Remarks.- Records good, except for a few days each year when flash floods occurred. Flood records poor. Winter flow affected by ice for a few days at a time during most winters, but during such periods discharge was only a few second-feet. Frequent discharge measurements made throughout entire period of record, but measurements above about 200 second-feet made by float-area or slope-area methods when the character and large quantity of suspended silt made the use of a current meter impossible. Small diversions for irrigation above station. The point at which Paria River enters Colorado River is a short distance downstream from the gaging station on Colorado River at Lees Ferry, and by definition is 1 mile upstream from the point in Colorado River termed "Lee Ferry" in the Colorado River Compact.

Monthly summary of discharge of Paria River at Lees Ferry, Ariz., 1923-38

(* Estimated; † Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923 a/	-	-	*15	465	922
November a/	-	-	35.0	†1,050	2,080
December	30	4	20.5	†635	1,260
January 1924	-	-	*15	465	922
February	48	18	29.7	860	1,710
March	39	19	24.9	771	1,530
April	37	6	22.5	676	1,340
May	15	3	5.2	162	321
June	7	3	3.5	105	208
July	428	4	35.1	1,089	2,160
August	17	3	5.9	184	365
September	1,540	4	101	3,033	6,020
Water year 1924	1,540	3	25.9	9,495	18,840
October 1924	193	5	19.0	588	1,170
November	27	12	21.5	645	1,280
December	55	-	13.3	†411	815
Calendar year 1924	1,540	3	24.6	e,989	17,840
January 1925	76	-	9.2	†286	567
February	72	8	28.3	†792	1,570
March	41	10	21.5	665	1,320
April	32	4	11.1	332	659
May	6	2	3.1	97	192
June	12	2	3.5	106	210
July	475	5	39.4	†1,220	2,420
August	1,450	6	124	†3,854	7,640
September	2,650	10	196	5,888	11,680
Water year 1925	2,650	2	40.8	14,884	29,520
October 1925	5,500	12	288	†8,925	17,700
November	77	14	21.7	650	1,290
December	24	10	15.2	472	936
Calendar year 1925	5,500	2	63.8	23,287	46,180
January 1926	30	9	18.8	582	1,150
February	42	11	22.5	630	1,250
March	28	6	14.8	458	908
April	275	10	57.5	1,724	3,420
May	31	3	10.6	330	655
June	2	1	2.0	59	117
July	150	2	12.6	391	776
August	155	2	20.9	647	1,280
September	600	2	43.3	1,300	2,580
Water year 1926	5,500	1	44.3	16,168	32,060

a Record Oct. 1 to Nov. 21, 1923 and resulting yearly discharge not previously published.

Monthly summary of discharge of Paria River at Lees Ferry, Ariz., 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1926	39	12	15.5	480	952
November	236	12	35.6	1,068	2,120
December	34	1	18.1	†562	1,110
Calendar year 1926	600	1	22.6	8,231	16,320
January 1927	36	9	21.1	†654	1,300
February	406	12	54.4	1,522	3,020
March	192	13	54.1	1,677	3,330
April	16	3	6.4	193	383
May	3	1	2.0	63	125
June	201	1	17.9	536	1,060
July	490	1	46.8	1,452	2,880
August	680	1	72.2	2,238	4,440
September	6,750	1	424	12,713	25,220
Water year 1927	6,750	1	63.4	23,158	45,940
October 1927	26	10	14.4	447	887
November	103	11	24.0	721	1,430
December	48	8	18.4	571	1,130
Calendar year 1927	6,750	1	62.4	22,787	45,200
January 1928	24	10	18.6	578	1,150
February	163	13	30.3	880	1,750
March	417	13	40.8	1,264	2,510
April	18	3	6.7	201	399
May	61	2	8.7	271	538
June	3	1	2.1	63	125
July	694	2	31.6	979	1,940
August	934	4	62.6	1,942	3,850
September	10	4	5.9	178	353
Water year 1928	934	1	22.1	8,095	16,060
October 1928	72	5	13.2	409	811
November	78	10	20.9	628	1,250
December	28	7	†15.6	485	962
Calendar year 1928	934	1	21.5	7,878	15,640
January 1929	28	8	†14.7	457	906
February	55	7	†24.2	679	1,350
March	94	11	25.6	794	1,570
April	26	3	7.6	228	452
May	b7	2	3.2	99	196
June	3	2	2.7	80	159
July	968	2	132	4,082	8,100
August	2,220	15	174	5,387	10,680
September	1,340	11	141	4,224	8,380
Water year 1929	2,220	2	48.1	17,552	34,820
October 1929	36	8	12.9	401	795
November	20	7	11.8	354	702
December	20	2	11.9	†369	732
Calendar year 1929	2,220	2	47.0	17,154	34,020
January 1930	30	3	14.9	†463	918
February	54	12	28.6	802	1,590
March	26	6	13.3	412	817
April	11	2	4.9	148	294
May	16	2	5.8	180	357
June	53	2	5.6	167	331
July	325	1	50.3	1,560	3,090
August	1,220	2	114	3,532	7,010
September	480	3	40.2	1,206	2,390
Water year 1930	1,220	1	26.3	9,594	19,030
October 1930	383	11	26.8	832	1,650
November	412	6	30.6	918	1,820
December	21	3	8.8	273	541
Calendar year 1930	1,220	1	28.7	10,493	20,810
January 1931	19	4	8.0	249	494
February	59	11	30.9	866	1,720
March	20	7	12.1	374	742
April	28	2	5.9	177	351
May	61	2	9.6	298	591
June	40	2	4.9	147	292
July	172	2	14.1	437	867
August	73	2	17.1	531	1,050
September	183	2	21.0	630	1,250
Water year 1931	412	2	15.7	5,732	11,370

b Revised.

Monthly summary of discharge of Paria River at Lees Ferry, Ariz., 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	143	8	20.7	641	1,270
November	100	3	18.0	540	1,070
December	24	2	9.6	†297	589
Calendar year 1931	183	2	14.2	5,187	10,290
January 1932	29	4	15.1	†468	928
February	1,370	15	148	4,285	8,500
March	200	25	58.8	1,822	3,610
April	50	4	18.8	564	1,120
May	44	2	8.5	265	526
June	16	2	3.8	113	224
July	1,110	2	65.1	2,019	4,000
August	4,890	4	237	7,346	14,570
September	353	5	25.4	763	1,510
Water year 1932	4,890	2	52.2	19,123	37,920
October 1932	104	7	20.0	620	1,230
November	20	14	16.7	502	996
December	42	4	14.0	†434	861
Calendar year 1932	4,890	2	52.5	19,201	38,080
January 1933	20	4	10.8	†335	664
February	81	5	23.8	†666	1,320
March	119	15	39.3	1,219	2,420
April	20	5	10.3	309	613
May	26	3	7.7	239	474
June	3	2	2.6	79	157
July	450	3	50.3	1,559	3,090
August	558	4	39.7	1,230	2,440
September	685	4	40.5	1,214	2,410
Water year 1933	685	2	23.0	8,406	16,680
October 1933	166	6	21.7	674	1,340
November	100	8	17.4	522	1,040
December	142	7	29.2	†904	1,790
Calendar year 1933	685	2	24.5	8,950	17,760
January 1934	146	7	25.4	†787	1,560
February	73	16	21.1	591	1,170
March	19	8	13.8	427	847
April	9	4	5.8	173	343
May	927	3	52.4	1,623	3,220
June	44	4	7.9	236	468
July	239	3	16.4	509	1,010
August	1,920	7	95.8	2,970	5,890
September	169	4	12.8	384	762
Water year 1934	1,920	3	26.8	9,800	19,440
October 1934	8	5	6.5	202	401
November	33	8	12.6	378	750
December	87	6	23.8	737	1,460
Calendar year 1934	1,920	3	24.7	9,017	17,880
January 1935	46	8	26.5	†820	1,630
February	110	12	34.2	958	1,900
March	105	18	38.9	1,205	2,390
April	432	9	42.8	1,285	2,550
May	49	4	12.2	378	750
June	4	2	3.2	96	190
July	188	3	14.4	447	887
August	171	4	28.8	893	1,770
September	541	5	41.1	1,234	2,450
Water year 1935	541	2	23.7	8,633	17,130
October 1935	12	7	8.6	266	528
November	38	8	18.4	552	1,090
December	34	6	18.6	578	1,150
Calendar year 1935	541	2	23.9	8,712	17,280
January 1936	30	8	20.6	638	1,270
February	218	17	42.6	1,234	2,450
March	31	14	20.5	634	1,260
April	20	4	8.3	249	494
May	5	2	3.3	103	204
June	7	3	3.5	106	210
July	2,970	3	172	†5,340	10,590
August	1,290	7	155	†4,800	9,520
September	1,680	6	109	3,284	6,510
Water year 1936	2,970	2	48.6	17,784	35,280

Monthly summary of discharge of Paria River at Lees Ferry, Ariz., 1923-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	456	7	29.0	900	1,790
November	194	14	26.3	790	1,570
December	43	9	16.4	509	1,010
Calendar year 1936	2,970	2	60.8	18,587	36,880
January 1936	20	4	8.7	271	538
February	568	9	75.5	2,115	4,200
March	328	40	104	3,223	6,390
April	101	16	47.1	1,413	2,800
May	16	3	7.7	239	474
June	13	3	5.4	162	321
July	275	4	40.5	1,256	2,490
August	668	4	43.2	1,339	2,660
September	276	12	46.1	1,382	2,740
Water year 1937	668	3	37.3	13,599	26,980
October 1937	73	13	19.8	615	1,220
November	27	15	18.3	550	1,090
December	57	10	20.8	645	1,280
Calendar year 1937	668	3	36.2	13,210	26,200
January 1938	44	10	24.8	769	1,530
February	58	18	25.2	706	1,400
March	2,510	21	175	5,410	10,730
April	29	11	19.6	589	1,170
May	47	4	10.8	336	666
June	368	3	18.2	547	1,080
July	23	4	7.5	233	462
August	302	3	24.3	754	1,500
September	533	7	60.3	1,808	3,590
Water year 1938	2,510	3	35.5	12,962	25,720

Yearly discharge of Paria River at Lees Ferry, Ariz., 1924-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1924	25.9	18,840	24.6	17,840
1925	40.8	29,520	63.8	46,180
1926	44.3	32,060	22.6	16,320
1927	63.4	45,940	62.4	45,200
1928	22.1	16,060	21.5	15,640
1929	48.1	34,820	47.0	34,020
1930	26.3	19,030	28.7	20,810
1931	15.7	11,370	14.2	10,290
1932	52.2	37,920	52.5	38,080
1933	23.0	16,680	24.5	17,760
1934	26.8	19,440	24.7	17,880
1935	23.7	17,130	23.9	17,280
1936	48.6	35,280	50.8	36,880
1937	37.3	26,980	36.2	26,200
1938	35.5	25,720		

LITTLE COLORADO RIVER AT GRAND FALLS, ARIZ.

Location.- Lat. 35°26', long. 111°12', in T. 24 N., R. 11 E., unsurveyed, on Navajo Indian Reservation, at Grand Falls, 38 miles northeast of Flagstaff, and 96 miles upstream from mouth. (See pl. 8, A.)

Drainage area.- 21,200 square miles (1940 revision).

Records available.- October 1925 to September 1938.

Average discharge.- 13 years (water years, 1926-38), 328 second-feet.

Extremes.- 1925-38: Maximum discharge, 50,500 second-feet Apr. 5, 1929 (gage height, 30.0 feet); no flow during parts of each year.
A discharge of about 120,000 second-feet occurred on Sept. 19, 1923 (gage height, 47.0 feet, from floodmarks observed in 1925).

Gage.- Water-stage recorder on left bank in narrow box canyon 1,000 feet downstream from Grand Falls, installed Jan. 5, 1926. Zero of gage is about 4,440 feet above mean sea level. Staff gage at same site and datum, read twice daily to hundredths, Nov. 15, 1925, to Jan. 4, 1926.

Remarks.- Records good, including those for brief periods estimated or partly estimated. Ice effect during most winters, but generally during periods of very low discharge. Small portions of the gage-height record for the lower receding stages following numerous flash floods are often lost due to silt deposited by such floods in the stilling well of recording gage. Discharge for these periods estimated from partial gage-height record and weather records. Discharge for longer periods, indicated by footnotes to tables, similarly estimated. Water is diverted for irrigation, municipal, and railroad use above station. Some regulation by irrigation reservoirs on headwaters (combined capacity, about 73,000 acre-feet).

Monthly summary of discharge of Little Colorado River at Grand Falls, Ariz., 1925-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925 a/	-	-	*100	3,100	6,150
November a/	-	26	65.0	†1,950	3,870
December	130	13	39.3	1,217	2,410
January 1926	30	8	15.4	477	946
February	28	0	8.5	239	474
March	830	0	305	9,441	18,730
April	6,260	265	1,411	42,317	83,930
May	1,720	0	177	5,480	10,870
June	0	0	0	0	0
July	124	0	11.2	347	688
August	645	0	90.0	2,790	5,530
September	13,900	0	805	24,163	47,930
Water year 1926	13,900	0	251	91,521	181,500
October 1926	210	8	38.5	1,195	2,370
November	38	10	18.8	563	1,120
December	42	4	16.3	504	1,000
Calendar year 1926	13,900	0	240	87,516	173,600
January 1927	319	0	48.8	1,513	3,000
February	5,480	18	1,098	30,746	60,980
March	2,560	495	1,219	†37,788	74,950
April	1,890	145	849	†25,462	50,500
May	450	0	98.4	†3,051	6,050
June	12,700	0	622	18,647	36,990
July	868	124	336	10,417	20,660
August	1,360	50	339	10,508	20,840
September	8,190	60	1,937	58,118	115,300
Water year 1927	12,700	0	544	196,512	393,800
October 1927	90	0	10.5	†324	643
November	0	0	0	0	0
December	29	0	2.5	77	153
Calendar year 1927	12,700	0	539	196,651	390,100
January 1928	16	0	7.5	234	464
February	1,860	15	299	†8,677	17,210
March	1,600	141	821	†25,440	50,460
April	650	8	128	†3,833	7,600
May	18	0	2.0	63	125
June	0	0	0	0	0
July	289	0	40.4	1,253	2,490
August	772	0	85.4	†2,646	5,250
September	353	0	53.3	†1,599	3,170
Water year 1928	1,860	0	121	44,146	87,560

a Record Oct. 1 to Nov. 14, 1925, and resulting yearly discharge not previously published.

Monthly summary of discharge of Little Colorado River at Grand Falls, Ariz., 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	14	0	1.4	44	87
November	1,950	2	123	3,680	7,300
December	55	3	14.8	458	908
Calendar year 1928	1,950	0	131	47,927	95,060
January 1929	40	3	8.8	274	543
February	76	11	25.6	718	1,420
March	2,280	14	689	21,351	42,350
April	27,100	225	2,609	78,277	155,300
May	192	0	39.4	1,222	2,420
June	0	0	0	0	0
July	13,200	0	1,575	48,828	96,850
August	6,130	118	1,794	55,618	110,300
September	11,000	70	1,568	47,053	93,330
Water year 1929	27,100	0	706	257,523	510,800
October 1929	1,780	13	197	6,097	12,090
November	33	2	8.3	250	496
December	20	0	7.6	236	468
Calendar year 1929	27,100	0	712	259,924	515,600
January 1930	31	0	10.6	330	655
February	214	0	25.6	718	1,420
March	1,130	41	363	11,248	22,310
April	1,240	51	454	13,634	27,040
May	102	0	16.3	504	1,000
June	0	0	0	0	0
July	4,510	0	822	25,481	50,540
August	5,570	0	1,100	34,108	67,650
September	1,770	0	94.7	2,841	5,640
Water year 1930	5,570	0	261	96,447	189,300
October 1930	0	0	0	0	0
November	322	0	16.8	505	1,000
December	534	4	72.1	2,236	4,440
Calendar year 1930	5,570	0	251	91,605	181,700
January 1931	60	6	18.5	†572	1,130
February	1,370	28	225	6,290	12,480
March	978	85	477	14,792	29,340
April	594	46	233	7,002	13,890
May	1,920	0	202	6,266	12,430
June	1	0	.03	1	2
July	2,300	0	378	11,714	23,230
August	3,680	22	835	25,884	51,340
September	1,370	20	267	7,999	15,870
Water year 1931	3,680	0	228	83,261	165,200
October 1931	3,070	6	229	7,106	14,090
November	2,580	3	287	8,603	17,060
December	300	25	115	†3,560	7,060
Calendar year 1931	3,680	0	273	99,789	197,900
January 1932	200	125	153	†4,750	9,420
February	19,800	180	2,673	77,504	153,700
March	4,240	1,200	2,387	74,000	146,800
April	2,550	471	1,306	39,176	77,700
May	510	0	153	4,742	9,410
June	0	0	0	0	0
July	870	0	54.2	1,681	3,330
August	2,190	0	393	12,188	24,170
September	524	0	51.9	1,556	3,090
Water year 1932	19,800	0	642	234,666	465,800
October 1932	454	0	31.0	960	1,900
November	11	2	4.0	119	236
December	6	0	1.5	45	89
Calendar year 1932	19,800	0	592	216,721	429,800
January 1933	34	0	3.0	93	184
February	1,450	15	133	3,718	7,370
March	940	60	411	12,734	25,260
April	961	29	303	9,099	18,050
May	997	0	172	5,344	10,600
June	0	0	0	0	0
July	2,000	0	297	9,215	18,280
August	1,930	3	319	9,886	19,610
September	4,630	0	465	13,942	27,650
Water year 1933	4,630	0	179	65,155	129,200

Monthly summary of discharge of Little Colorado River at Grand Falls, Ariz., 1925-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	3,520	10	506	15,691	31,120
November	42	6	17.3	519	1,030
December	51	4	20.0	620	1,230
Calendar year 1933	4,630	0	222	80,861	160,400
January 1934	22	0	11.6	359	712
February	218	0	14.0	392	778
March	147	0	27.5	851	1,690
April	225	0	25.2	755	1,500
May	2	0	.1	3	6
June	384	0	25.2	755	1,500
July	277	0	33.5	1,040	2,060
August	3,060	0	340	10,534	20,690
September	1,420	0	142	4,266	8,460
Water year 1934	3,520	0	98.0	35,785	70,980
October 1934	29	0	2.3	70	139
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1934	3,060	0	52.1	19,025	37,740
January 1935	2,380	0	310	19,621	19,080
February	1,300	106	494	13,834	27,440
March	2,630	100	618	19,159	38,000
April	4,530	156	1,220	36,598	72,590
May	153	0	45.9	1,422	2,820
June	0	0	0	0	0
July	103	0	11.8	365	724
August	2,820	5	534	16,557	32,840
September	2,810	0	366	10,991	21,800
Water year 1935	4,530	0	298	108,617	215,400
October 1935	295	0	28.0	867	1,720
November	17	0	1.7	50	99
December	31	b2	13.5	417	827
Calendar year 1935	4,530	0	301	109,881	217,900
January 1936	30	0	10.3	318	631
February	434	8	70.2	2,037	4,040
March	755	74	369	11,434	22,680
April	2,020	118	828	24,830	49,250
May	96	0	12.2	379	752
June	0	0	0	0	0
July	979	0	62.4	1,933	3,830
August	3,150	27	742	23,004	45,630
September	2,000	70	598	17,953	35,610
Water year 1936	3,150	0	227	83,222	165,100
October 1936	56	0	5.5	169	335
November	1,070	8	82.7	2,481	4,920
December	10	1	3.9	122	242
Calendar year 1936	3,150	0	231	84,660	167,900
January 1937	3	0	.3	9	18
February	12,700	0	2,084	58,361	115,800
March	6,380	382	1,804	55,929	110,900
April	2,880	330	1,497	44,918	89,090
May	227	0	41.2	1,278	2,530
June	0	0	0	0	0
July	1,060	0	97.9	3,036	6,020
August	344	0	45.2	1,401	2,780
September	1,110	0	115	3,464	6,870
Water year 1937	12,700	0	469	171,168	339,500
October 1937	1,170	0	102	3,167	6,280
November	6	0	1.6	48	95
December	51	0	8.7	271	538
Calendar year 1937	12,700	0	471	171,882	340,900
January 1938	8	0	1.5	47	93
February	161	0	22.5	631	1,250
March	19,200	154	2,084	64,607	128,100
April	184	21	74.7	2,240	4,440
May	14	0	.7	22	44
June	0	0	0	0	0
July	37	0	2.8	86	171
August	1,760	0	182	5,656	11,220
September	1,560	0	302	9,051	17,950
Water year 1938	19,200	0	235	85,826	170,200

b Revised.

Yearly discharge of Little Colorado River at Grand Falls, Ariz., 1926-38

(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1926	251	181,500	240	173,600
1927	544	393,800	539	390,100
1928	121	87,560	131	95,060
1929	706	510,800	712	515,600
1930	261	189,300	251	181,700
1931	228	165,200	273	197,900
1932	642	465,800	592	429,800
1933	179	129,200	222	160,400
1934	98.0	70,980	52.1	37,740
1935	298	215,400	301	217,900
1936	227	165,100	231	‡167,900
1937	469	339,500	471	340,900
1938	235	170,200	-	-

COLORADO RIVER AT BRIGHT ANGEL CREEK, NEAR GRAND CANYON, ARIZ.

Location.- Lat. 36°05'55", long. 112°05'30", at Kaibab Bridge, a quarter of a mile upstream from Bright Angel Creek, 11 miles by trail northeast of Grand Canyon, Coconino County, 26 miles downstream from Little Colorado River, and 267 miles upstream from Boulder Dam.

Drainage area.- 137,800 square miles (1940 revision).

Records available.- October 1922 to September 1938.

Average discharge.- 16 years (water years, 1923-38), 18,110 second-feet.

Extremes.- 1922-38: Maximum discharge, 127,000 second-feet July 2, 1927 (gage height, 29.25 feet); minimum, 700 second-feet Dec. 28, 1924 (gage height, -0.70 foot).
Maximum discharge known, 300,000 second-feet about July 8, 1884 (computed on basis of flood studies at Lees Ferry). Crest discharge of flood of June 19, 1921, 220,000 second-feet (gage height, 37.5 feet, from floodmarks), from rating curve extended logarithmically above 120,000 second-feet.

Gage.- Water-stage recorder on right bank, 300 feet upstream from Kaibab Bridge, since Dec. 9, 1922; supplemented by water-stage recorder on left bank 700 feet upstream, used principally for records at lower stages (generally for discharge under 20,000 second-feet), since Oct. 1, 1934. Datum of both gages is 2,418.7 feet above mean sea level (preliminary adjustment of 1929). Staff gage used Nov. 12 to Dec. 9, 1922, at site of, and pending installation of, the recording gage.

Remarks.- Records for 1923 are good and for 1924-38 excellent. During this period of 16 years 2,062 discharge measurements were made, using equipment and methods specially adapted to lower Colorado River which were developed during 1923-24 and used exclusively thereafter. Frequent discharge measurements particularly at the higher stages, coupled with stable channel control and complete freedom from ice effect have maintained an accuracy of record to a degree unusual for lower Colorado River. Records at this station provide a direct measure of discharge of Colorado River into Lake Mead except for minor inflow in the lower Grand Canyon.

Monthly summary of discharge of Colorado River at Bright Angel Creek, near Grand Canyon, Ariz., 1922-38

(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1922	-	-	5,200	a161,200	319,700
November	7,660	-	7,119	a213,580	423,600
December	8,480	5,520	7,122	220,770	437,900
January 1923	7,130	5,840	6,517	202,040	400,700
February	8,330	5,770	6,651	186,240	369,400
March	9,040	7,360	8,118	251,650	499,100
April	32,000	8,640	21,950	658,540	1,306,000
May	97,300	20,900	58,030	1,798,800	3,568,000
June	95,100	60,200	78,030	2,340,800	4,643,000
July	61,200	23,600	37,840	1,172,900	2,326,000
August	33,400	15,200	23,420	726,000	1,440,000
September	98,500	9,380	22,030	660,810	1,311,000
Water year 1923	98,500	-	23,540	8,593,330	17,040,000
October 1923	14,400	10,400	12,240	379,500	752,700
November	35,100	8,680	12,880	386,360	766,300
December	39,500	‡5,230	9,653	299,250	593,600
Calendar year 1923	98,500	5,230	24,830	9,062,890	17,980,000
January 1924	12,600	4,040	6,007	186,220	369,400
February	11,900	6,450	9,200	266,790	529,200
March	11,200	7,540	8,654	268,260	532,100
April	45,900	8,600	27,960	838,750	1,664,000
May	65,100	24,100	48,700	1,509,700	2,994,000
June	73,200	32,900	53,000	1,589,900	3,154,000
July	30,500	8,760	17,060	528,990	1,049,000
August	8,840	3,100	5,443	168,730	334,700
September	11,000	2,790	4,631	138,930	275,600
Water year 1924	73,200	2,790	17,930	6,561,380	13,010,000
October 1924	7,550	4,090	6,149	190,610	378,100
November	7,130	6,560	6,841	205,240	407,100
December	6,730	990	4,884	151,400	300,300
Calendar year 1924	73,200	990	16,510	6,043,520	11,990,000
January 1925	5,820	1,400	4,389	136,070	269,900
February	9,040	6,210	7,674	214,870	426,200
March	18,100	7,760	10,760	333,430	661,300
April	33,800	16,700	22,010	660,300	1,310,000
May	49,800	19,800	34,190	1,059,900	2,102,000
June	51,900	31,100	40,270	1,208,100	2,396,000
July	36,000	13,700	24,190	749,800	1,487,000
August	25,900	9,500	13,050	404,570	802,500
September	35,000	12,600	20,090	602,800	1,196,000
Water year 1925	51,900	990	16,210	5,917,090	11,740,000

a Discharge Oct. 1 to Nov. 11, 1922, estimated from comparison with discharge at Lees Ferry and Topock stations.

Monthly summary of discharge of Colorado River at Bright Angel Creek, near Grand Canyon, Ariz., 1922-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	29,000	11,300	17,020	527,600	1,046,000
November	12,500	8,310	10,430	313,000	620,800
December	8,770	5,720	7,487	232,110	460,400
Calendar year 1925	51,900	1,400	17,650	6,442,550	12,780,000
January 1926	7,030	5,120	6,042	187,300	371,500
February	7,320	5,250	6,526	182,720	362,400
March	16,100	6,320	10,640	329,980	654,500
April	50,800	12,100	27,740	832,200	1,651,000
May	84,000	32,600	54,950	1,703,400	3,379,000
June	78,500	28,600	58,470	1,754,200	3,479,000
July	36,900	11,800	23,230	720,200	1,428,000
August	12,800	5,450	9,435	292,470	580,100
September	21,600	3,870	6,509	195,280	387,300
Water year 1926	84,000	3,870	19,920	7,270,460	14,420,000
October 1926	9,340	6,110	7,619	236,180	468,500
November	6,780	5,830	6,248	187,440	371,800
December	11,700	2,970	6,761	209,580	415,700
Calendar year 1926	84,000	2,970	18,710	6,830,950	13,550,000
January 1927	7,570	2,870	5,877	182,180	361,300
February	16,400	5,800	8,336	233,400	462,900
March	12,900	8,320	11,020	341,720	677,800
April	35,900	13,500	21,580	647,500	1,284,000
May	91,800	37,600	62,970	1,952,000	3,872,000
June	90,900	46,000	61,520	1,845,600	3,661,000
July	117,000	17,200	41,100	1,274,200	2,527,000
August	25,000	9,340	16,150	500,610	992,900
September	114,000	10,800	36,410	1,092,200	2,166,000
Water year 1927	117,000	2,870	23,840	8,702,610	17,260,000
October 1927	23,700	11,200	15,690	486,500	965,000
November	21,100	10,900	13,090	392,600	778,700
December	11,100	4,610	7,910	245,220	486,400
Calendar year 1927	117,000	2,870	25,190	9,193,730	18,240,000
January 1928	9,830	7,020	8,103	251,200	498,200
February	12,000	7,420	8,714	252,710	501,200
March	24,400	7,690	12,690	393,240	780,000
April	25,800	10,900	16,580	497,500	986,800
May	101,000	31,800	69,450	2,152,800	4,270,000
June	114,000	37,400	63,290	1,898,800	3,766,000
July	41,600	15,100	25,260	783,200	1,553,000
August	14,800	7,430	10,850	336,360	667,200
September	9,340	5,150	6,298	188,940	374,800
Water year 1928	114,000	4,610	21,530	7,879,070	15,630,000
October 1928	24,700	5,230	9,998	309,940	614,800
November	17,900	7,770	9,906	297,170	589,400
December	9,110	2,960	5,950	184,440	365,800
Calendar year 1928	114,000	2,960	20,620	7,546,300	14,970,000
January 1929	6,740	4,660	5,686	176,280	349,600
February	8,470	5,010	6,504	182,110	361,200
March	35,400	6,800	15,460	479,210	950,500
April	51,400	13,500	29,740	892,200	1,770,000
May	108,000	24,800	63,450	1,966,900	3,901,000
June	96,200	57,600	79,410	2,382,300	4,725,000
July	59,300	21,500	34,410	1,066,600	2,116,000
August	60,900	12,300	32,440	1,005,700	1,995,000
September	48,100	14,300	28,490	854,600	1,695,000
Water year 1929	108,000	2,960	26,840	9,797,450	19,430,000
October 1929	22,900	10,900	15,390	477,100	946,300
November	10,800	7,300	9,805	294,160	583,500
December	8,840	4,370	7,479	231,840	459,800
Calendar year 1929	108,000	4,370	27,420	10,009,000	19,850,000
January 1930	6,700	3,200	5,166	160,140	317,600
February	16,500	4,710	8,655	242,330	480,700
March	13,400	8,170	9,960	308,760	612,400
April	44,600	9,440	28,070	842,090	1,670,000
May	48,300	20,600	32,510	1,007,700	1,999,000
June	69,000	29,200	51,700	1,550,900	3,076,000
July	26,600	13,200	18,790	582,400	1,155,000
August	64,800	11,200	25,900	802,800	1,592,000
September	14,500	6,070	8,914	267,410	530,400
Water year 1930	69,000	3,200	18,540	6,767,630	13,420,000

Monthly summary of discharge of Colorado River at Bright Angel Creek, near Grand Canyon, Ariz., 1922-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	10,800	8,300	9,203	285,290	565,900
November	9,690	4,990	7,493	224,780	445,800
December	5,950	3,450	5,087	157,690	312,800
Calendar year 1930	69,000	3,200	17,620	6,432,290	12,760,000
January 1931	5,220	3,550	4,554	141,180	280,000
February	9,020	5,420	6,939	194,290	385,400
March	9,760	6,050	7,349	227,810	451,900
April	15,100	6,650	9,667	290,000	575,200
May	33,800	12,600	18,950	587,400	1,165,000
June	31,900	12,900	23,710	711,300	1,411,000
July	17,700	3,350	8,195	254,050	503,900
August	8,860	2,900	5,279	163,650	324,600
September	15,400	2,560	5,026	150,780	299,100
Water year 1931	33,800	2,560	9,283	3,388,220	6,721,000
October 1931	18,200	5,800	8,698	269,630	534,800
November	10,500	4,020	6,556	196,680	390,100
December	7,010	2,160	4,445	137,780	273,300
Calendar year 1931	33,800	2,160	9,108	3,324,550	6,594,000
January 1932	7,160	4,220	4,987	154,610	306,700
February	45,900	4,170	12,710	368,550	731,000
March	19,200	9,580	13,790	427,550	848,000
April	40,500	14,300	28,970	869,100	1,724,000
May	101,000	27,000	64,550	2,001,100	3,969,000
June	71,200	49,900	60,830	1,824,900	3,620,000
July	65,300	14,800	33,610	1,041,900	2,067,000
August	49,800	6,750	15,630	484,490	961,000
September	31,200	4,690	9,086	272,580	540,700
Water year 1932	101,000	2,160	21,990	8,048,870	15,970,000
October 1932	7,110	4,970	5,765	178,730	354,500
November	7,020	6,180	6,651	199,540	395,800
December	6,730	2,790	4,862	150,730	299 000
Calendar year 1932	101,000	2,790	21,790	7,973,780	15,820,000
January 1933	5,650	2,880	4,611	142,950	283,500
February	6,180	2,720	4,982	139,500	276,700
March	10,400	7,070	8,608	266,840	529,300
April	10,600	6,830	8,749	262,470	520,600
May	48,100	9,220	22,610	700,920	1,390,000
June	80,000	37,600	66,770	2,003,000	3,973,000
July	34,100	7,600	19,200	595,250	1,181,000
August	11,800	3,300	6,287	194,890	386,600
September	15,200	3,080	7,035	211,050	418,600
Water year 1933	80,000	2,720	13,820	5,045,870	10,010,000
October 1933	14,500	4,570	7,030	217,940	432,300
November	5,480	4,450	5,200	156,000	309,400
December	7,720	4,030	5,523	171,200	339,600
Calendar year 1933	80,000	2,720	13,870	5,062,010	10,040,000
January 1934	6,510	4,270	5,355	166,020	329,300
February	6,460	4,980	5,706	159,760	316,900
March	6,360	5,180	5,675	175,920	348,900
April	13,500	5,070	7,603	228,100	452,400
May	24,900	13,300	17,930	555,900	1,103,000
June	18,300	3,230	9,169	275,070	545,600
July	3,190	1,840	2,380	73,790	146,400
August	8,560	1,490	2,699	83,680	166,000
September	7,980	1,770	2,797	83,920	166,500
Water year 1934	24,900	1,490	6,431	2,347,300	4,656,000
October 1934	3,500	2,430	2,796	86,690	171,900
November	4,030	2,720	3,291	98,720	195,800
December	4,780	2,830	3,956	122,640	243,300
Calendar year 1934	24,900	1,490	5,781	2,110,210	4,186,000
January 1935	7,980	2,940	4,685	145,250	288,100
February	16,340	4,580	5,513	154,370	306,200
March	8,080	4,780	6,151	190,680	378,200
April	16,900	7,970	12,290	368,760	731,400
May	44,500	13,100	22,140	686,300	1,361,000
June	103,000	45,400	67,090	2,012,600	3,992,000
July	47,600	11,400	24,620	763,100	1,514,000
August	12,700	7,380	9,435	292,480	580,100
September	18,100	4,360	7,632	228,950	454,100
Water year 1935	103,000	2,430	14,110	5,150,540	10,220,000

Monthly summary of discharge of Colorado River at Bright Angel Creek, near Grand Canyon, Ariz., 1922-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1935	15,800	4,570	6,270	194,380	385,500
November	6,020	5,080	5,636	169,080	335,400
December	6,870	3,140	4,714	146,140	289,900
Calendar year 1935	103,000	2,940	14,660	5,352,090	10,620,000
January 1936	5,260	3,750	4,532	140,480	278,600
February	7,780	4,540	5,767	167,250	331,700
March	9,330	5,970	8,194	254,010	503,800
April	51,700	6,720	22,060	661,700	1,312,000
May	75,100	40,500	58,280	1,806,600	3,583,000
June	69,400	26,300	45,500	1,365,100	2,708,000
July	29,800	8,810	17,000	526,910	1,045,000
August	29,700	9,010	15,030	465,870	924,000
September	22,400	5,280	10,490	314,700	624,200
Water year 1936	75,100	3,140	16,970	6,212,220	12,320,000
October 1936	7,410	5,120	5,896	182,780	362,500
November	10,700	6,830	7,706	231,170	458,500
December	6,830	4,110	5,500	170,500	338,200
Calendar year 1936	75,100	3,750	17,180	6,287,070	12,470,000
January 1937	6,010	2,020	3,539	109,700	217,600
February	18,200	4,130	9,562	267,750	531,100
March	22,300	8,000	13,360	414,140	821,400
April	44,600	10,800	26,310	789,200	1,565,000
May	83,600	25,600	56,450	1,749,900	3,471,000
June	64,900	29,500	40,360	1,210,800	2,402,000
July	32,000	11,200	22,230	689,200	1,367,000
August	13,300	4,110	6,877	213,180	422,800
September	15,100	3,960	7,605	228,150	452,500
Water year 1937	83,600	2,020	17,140	6,256,470	12,410,000
October 1937	23,100	5,090	7,906	245,090	486,100
November	7,570	6,220	6,671	200,140	397,000
December	8,600	5,130	6,626	205,420	407,400
Calendar year 1937	83,600	2,020	17,320	6,322,670	12,540,000
January 1938	7,180	4,580	5,499	170,480	338,100
February	8,340	5,110	6,449	180,580	358,200
March	39,100	6,700	14,660	454,370	901,200
April	66,100	9,150	25,870	775,970	1,539,000
May	74,400	26,300	53,470	1,657,700	3,288,000
June	99,400	58,600	78,640	2,359,200	4,679,000
July	63,100	12,000	28,520	884,000	1,753,000
August	12,200	4,790	8,834	273,840	543,200
September	25,400	5,570	15,760	472,690	937,600
Water year 1938	99,400	4,580	21,590	7,879,480	15,630,000

Yearly discharge of Colorado River at Bright Angel Creek, near Grand Canyon, Ariz., 1923-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1923	23,540	17,040,000	24,830	17,980,000
1924	17,930	13,010,000	16,510	11,990,000
1925	16,210	11,740,000	17,650	12,780,000
1926	19,920	14,420,000	18,710	13,550,000
1927	23,840	17,260,000	25,190	18,240,000
1928	21,530	15,630,000	20,620	14,970,000
1929	26,840	19,430,000	27,420	19,850,000
1930	18,540	13,420,000	17,620	12,760,000
1931	9,283	6,721,000	9,108	6,594,000
1932	21,990	15,970,000	21,790	15,820,000
1933	13,820	10,010,000	13,870	10,040,000
1934	6,431	4,656,000	5,781	4,186,000
1935	14,110	10,220,000	14,660	10,620,000
1936	16,970	12,320,000	17,180	12,470,000
1937	17,140	12,410,000	17,320	12,540,000
1938	21,590	15,630,000		

VIRGIN RIVER AT LITTLEFIELD, ARIZ.

Location.- Lat. 36°53', long. 113°56', in SW¼SW¼ sec. 4, T. 40 N., R. 15 W., three-eighths of a mile (1942 revision) downstream from Beaverdam Wash, three-eighths of a mile upstream (1942 revision) from Littlefield, and 36 miles upstream from water line of Lake Mead at elevation 1,221 feet above mean sea level.

Drainage area.- 5,090 square miles (1942 revision).

Records available.- October 1929 to September 1938.

Average discharge.- 9 years (water years, 1930-38), 262 second-feet.

Extremes.- 1929-38: Maximum discharge, 22,000 second-feet Mar. 3, 1938; minimum discharge observed, about 50 second-feet on many days in several years.

Gage.- Vertical staff gage on right bank, first installed Oct. 8, 1929, has been washed out many times by flash floods but promptly replaced; read once daily during normal flow and frequently twice a day during freshets. Gage was moved downstream 300 feet May 27, 1933.

Remarks.- Records poor. Channel unstable. Conditions are poor for measuring discharge, particularly for discharges above a few hundred second-feet. Flood discharge estimated or computed by slope-area determinations, observer's notes, or from comparison with flow at Virgin, Utah. Extreme low water flow is nearly uniform inflow from springs a short distance above the station. Diversions for irrigation above station, principally in Utah; none in Arizona except a few second-feet from Beaverdam Springs. Bunkerville and Mesquite canals divert water at a point a few miles downstream for irrigation in Nevada. Some small irrigation reservoirs in Virgin River and Santa Clara River Basins above this station. Minor diversion from Santa Clara River Basin to basin of Escalante Valley for irrigation outside of Colorado River Basin.

Monthly summary of discharge of Virgin River at Littlefield, Ariz., 1929-38

(† Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1929	120	63	86.9	†2,695	5,350
November	156	98	127	3,823	7,580
December	213	120	147	4,562	9,050
January 1930	322	107	224	6,952	13,790
February	795	175	262	7,331	14,540
March	249	63	161	4,991	9,900
April	240	74	143	4,301	8,530
May	1,200	87	456	†14,142	28,050
June	700	58	112	†3,363	6,670
July	700	54	108	†3,356	6,660
August	6,000	55	853	†26,455	52,470
September	4,500	58	428	†12,855	25,500
Water year 1930	6,000	54	260	94,826	188,100
October 1930	1,130	148	260	8,057	15,980
November	1,860	130	310	9,285	18,420
December	338	148	213	6,604	13,100
Calendar year 1930	6,000	54	295	107,692	213,600
January 1931	292	192	235	7,295	14,470
February	501	226	310	8,682	17,220
March	240	83	129	4,003	7,940
April	314	75	93.2	2,795	5,540
May	109	56	68.1	2,111	4,190
June	58	54	55.4	1,663	3,300
July	127	50	63.9	1,982	3,930
August	1,160	54	146	4,533	8,990
September	576	58	106	3,170	6,290
Water year 1931	1,860	50	165	60,180	119,400
October 1931	196	56	87.7	2,718	5,390
November	900	84	285	†8,548	16,950
December	268	134	192	5,952	11,810
Calendar year 1931	1,160	50	146	63,452	106,000
January 1932	217	130	155	4,815	9,550
February	10,000	167	1,327	†38,478	76,320
March	983	386	677	20,984	41,620
April	1,350	471	771	23,130	45,880
May	1,540	816	1,029	31,914	63,300
June	1,070	-	344	†10,313	20,460
July	3,500	-	381	†11,800	23,400
August	12,000	-	976	†30,250	60,000
September	500	63	121	†3,633	7,210
Water year 1932	12,000	-	526	192,535	381,900

Monthly summary of discharge of Virgin River at Littlefield, Ariz., 1929-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1932	400	108	173	5,359	10,630
November	191	145	168	5,026	9,970
December	458	188	260	8,069	16,000
Calendar year 1932	12,000	-	529	193,771	384,300
January 1933	320	183	230	7,138	14,160
February	305	215	239	6,684	13,260
March	265	153	201	6,220	12,340
April	600	67	155	4,645	9,210
May	1,200	131	288	8,915	17,680
June	416	52	116	3,458	6,860
July	493	51	123	3,799	7,540
August	402	52	77.8	2,413	4,790
September	277	53	83.4	2,502	4,960
Water year 1933	1,200	51	176	64,228	127,400
October 1933	151	58	90.9	2,819	5,590
November	500	96	129	†3,870	7,680
December	954	126	200	†6,188	12,270
Calendar year 1933	1,200	51	161	58,651	116,300
January 1934	913	146	203	6,288	12,470
February	323	148	184	5,139	10,190
March	192	81	118	3,648	7,240
April	81	55	61.6	1,849	3,670
May	64	53	55.4	1,718	3,410
June	63	53	55.7	1,671	3,310
July	333	54	67.4	2,089	4,140
August	189	53	63.8	†1,978	3,920
September	300	54	69.1	†2,072	4,110
Water year 1934	954	53	108	39,329	78,000
October 1934	215	61	83.2	2,579	5,120
November	271	79	114	3,431	6,810
December	886	132	211	6,536	12,960
Calendar year 1934	913	53	107	38,998	77,350
January 1935	251	203	232	7,195	14,270
February	378	162	245	6,849	13,580
March	410	162	246	7,623	15,120
April	1,380	203	585	17,547	34,800
May	701	375	516	15,981	31,700
June	369	52	137	4,120	8,170
July	319	52	75.8	2,351	4,660
August	1,800	54	200	6,198	12,290
September	254	52	88.8	2,665	5,290
Water year 1935	1,800	52	228	83,075	164,800
October 1935	86	50	64.9	2,011	3,990
November	384	70	123	3,695	7,330
December	279	130	179	5,562	11,030
Calendar year 1935	1,800	50	224	81,797	162,200
January 1936	170	†13	141	4,371	8,670
February	761	96	306	8,862	17,580
March	322	115	205	6,350	12,600
April	468	137	297	8,910	17,670
May	293	54	147	4,542	9,010
June	288	54	66.7	2,002	3,970
July	2,710	60	304	†9,433	18,710
August	2,370	65	193	†5,990	11,880
September	1,370	54	143	4,294	8,520
Water year 1936	2,710	50	180	66,022	131,000
October 1936	877	54	191	5,929	11,760
November	509	135	206	6,177	12,250
December	282	141	192	5,963	11,830
Calendar year 1936	2,710	54	199	72,823	144,400
January 1937	240	92	153	4,744	9,410
February	1,440	117	524	14,677	29,110
March	985	397	677	20,990	41,630
April	962	689	790	23,701	47,010
May	1,220	496	753	23,337	46,290
June	419	59	150	4,493	8,910
July	333	60	127	3,928	7,790
August	103	59	70.0	2,171	4,310
September	545	59	168	5,043	10,000
Water year 1937	1,440	54	332	121,153	240,300

Monthly summary of discharge of Virgin River at Littlefield, Ariz., 1929-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1937	137	74	94.3	2,922	5,800
November	197	109	141	4,231	8,390
December	290	200	252	7,827	15,520
Calendar year 1937	1,440	59	323	118,064	234,170
January 1938	500	254	280	8,669	17,190
February	513	262	323	9,034	17,920
March	17,000	201	1,380	†42,780	84,850
April	2,360	194	955	28,654	56,830
May	2,220	399	719	22,288	44,210
June	377	55	111	3,319	6,580
July	129	66	75.5	2,340	4,640
August	1,200	71	183	5,659	11,220
September	159	76	91.6	2,747	5,450
Water year 1938	17,000	55	385	140,470	278,600

Yearly discharge of Virgin River at Littlefield, Ariz., 1930-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1930	260	188,100	295	213,600
1931	165	119,400	146	106,100
1932	526	381,900	529	384,300
1933	176	127,400	161	116,300
1934	108	78,000	107	77,350
1935	228	164,800	224	162,200
1936	180	131,000	199	144,400
1937	332	240,300	323	234,170
1938	385	278,600	-	-

LAKE MEAD AT BOULDER DAM, ARIZ.-NEV.

Location.- Lat. 36°00'59", long. 114°44'10", in SW¼ sec. 3, T. 30 N., R. 23 W., Gila and Salt River meridian, on State line in center of Boulder Dam, in Colorado River.

Drainage area.- 167,800 square miles (1940 revision).

Records available.- February 1935 to September 1938.

Extremes.- 1935-38: Maximum available contents, 21,078,000 acre-feet (revised) Sept. 24-27, 1938 (elevation of water surface, 1,173.90 feet). No storage prior to Feb. 1, 1935. Normal low-water elevation of river surface at damsite prior to construction was 645.5 feet above mean sea level.

Gage.- Water-stage indicator in control room at Boulder Dam, actuated by continuously operating instrument at stilling well in upstream face on center line of dam; read for the record each day at 7 a.m., Pacific standard time. Datum of gage is at mean sea level (general adjustment of 1912, subject to correction), or 0.38 foot above mean sea level (general adjustment of 1929, subject to correction).

Prior to June 1936, daily elevations of water surface were obtained from temporary staff gagee in reservoir near dam.

Cooperation.- Records of elevation and revised capacity table dated August 1940, based on survey completed in 1940, furnished by the Bureau of Reclamation.

Remarks.- All elevations shown are in agreement with general adjustment of 1912. Revised figures of capacity and figures of available contents here presented are taken from the revised capacity table, dated August 1940, using original elevations. Storage was begun Feb. 1, 1935. Prior to their permanent closing on May 1, 1936, temporary outlet gates at the bottom of the reservoir made the total contents available for release. Since May 1, 1936, the lowest outlets are at elevation 895.0 feet, below which the unavailable (dead storage) contents are 3,207,000 acre-feet.

The total capacity of the reservoir, 32,359,000 acre-feet (revised), comprises the dead storage, 3,207,000 acre-feet (revised) below elevation 895.0 feet (gate sills in outlet towers); the usable storage capacity, 27,935,000 acre-feet (revised) between elevations 895.0 feet and 1,221.4 feet (top of automatic spillway gates in raised position); and the capacity for uncontrolled storage, 1,217,000 acre-feet (revised) between elevations 1,221.4 feet and 1,229.0 feet (the planned maximum elevation of the water surface of the reservoir).

There is practically no regulation of the flow of Colorado River into Lake Mead, except that the low-season discharge is considerably reduced by diversions of water for irrigation upstream. Water stored in Lake Mead is released in accordance with requirements for power development, irrigation and municipal use, and flood control downstream. Up to the close of 1938, there had been no discharge over the spillways, nor any other uncontrolled release of water past Boulder Dam.

Elevation of water surface, in feet, and available contents, in thousands of acre-feet, of Lake Mead at Boulder Dam, Ariz.-Nev., at 7 a.m. Pacific standard time on last day of each month, 1935-38

Month	1935		1936		1937		1938	
	Elevation	Contents	Elevation	Contents	Elevation	Contents	Elevation	Contents
October	-	-	914.9	3,914	1,022.55	6,274	1,096.7	12,340
November	-	-	908.3	3,669	1,023.55	6,342	1,096.0	12,272
December	-	-	908.4	3,673	1,023.5	6,339	1,095.75	12,248
January	-	-	907.9	3,654	1,022.25	6,254	1,095.0	12,176
February	708.7	107	908.35	3,671	1,026.15	6,520	1,094.85	12,162
March	701.7	80	906.9	3,618	1,031.0	6,859	1,100.2	12,681
April	752.4	356	922.25	4,199	1,044.55	7,849	1,109.2	13,578
May	806.6	1,013	982.4	a3,816	1,078.7	10,667	1,134.3	16,262
June	909.1	3,699	1,015.5	5,804	1,096.55	12,325	1,165.6	20,003
July	928.45	4,449	1,020.45	6,132	1,102.8	12,936	1,173.5	21,026
August	925.9	4,346	1,024.45	6,404	1,099.55	12,617	1,171.95	20,822
September	920.75	4,140	1,024.6	6,414	1,097.65	12,432	1,173.8	21,065
Maximum	928.45	4,449	1,025.85	6,500	1,102.90	12,946	1,173.90	21,078
Date	July 30 to Aug. 2		Sept. 10		July 28		Sept. 24-27	
Minimum	-	0	905.20	b3,558	1,021.90	6,230	1,094.65	12,143
Date	Prior to Feb. 1		Apr. 14		Feb. 5		Feb. 13-18	

a Permanent closing of temporary outlet gates at bottom of reservoir, on May 1, 1936, reduced available storage 3,207,000 acre-feet.

b Available contents on date of minimum elevation; minimum available contente 1,070 thousand acre-feet May 1 (elevation, 924.2 feet) when outlets at bottom of reservoir were closed permanently.

Note.- Contents based on revised capacity table dated August 1940.

COLORADO RIVER NEAR WILLOW BEACH, ARIZ.

Location.- Lat. 35°53'30", long. 114°41'15", in sec. 19, T. 29 N., R. 22 W., 2 miles upstream from Willow Beach, and 10 miles downstream from Boulder Dam.

Drainage area.- 168,400 square miles(1940 revision).

Records available.- October 1933 to September 1938.

Average discharge.- 5 years (water years, 1934-38), 7,976 second-feet.

Extremes.- 1934 (unregulated): Maximum discharge, 25,600 second-feet May 19 (gage height, 35.15 feet); minimum, 1,920 second-feet Aug. 14 (gage height, 28.06 feet).
1935-36 (regulated): Maximum discharge, 19,900 second-feet July 2, 1938 (gage height, 31.99 feet); minimum, 33 second-feet Feb. 11, 1935 (gage height, 25.78 feet); minimum daily discharge, 152 second-feet Feb. 10, 1935; minimum gage height, 22.45 feet May 30, 1936.

Gage.- Water-stage recorder on right bank in narrow rock-walled gorge (pl. 8, B), 2 miles upstream from Willow Beach, and 10 miles downstream from Boulder Dam, since Apr. 1, 1934. Zero of gage is 594.8 feet above mean sea level (general adjustment of 1912). Temporary staff gages at same site and datum read to hundredths two or more times a day Feb. 8 to Mar. 31, 1934.

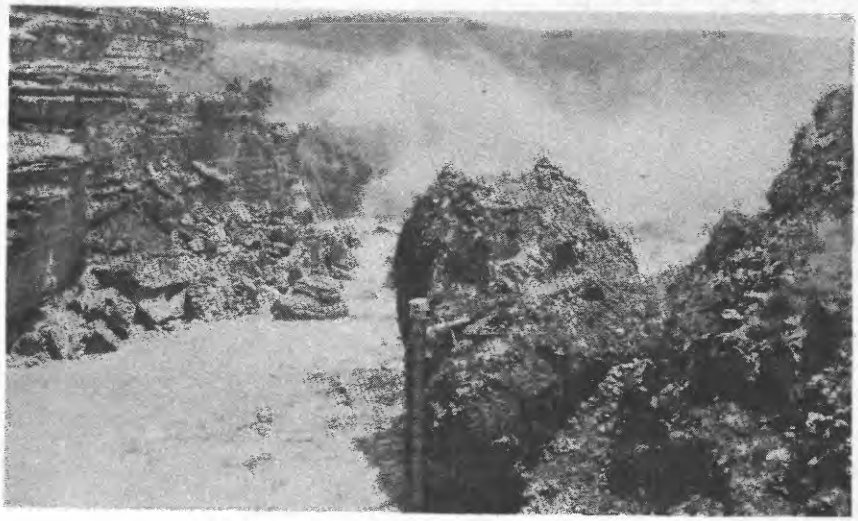
Remarks.- Records excellent. Discharge measurements using equipment and methods particularly adapted to lower Colorado River made almost daily since Apr. 1, 1934, with additional measurements on days of important change in flow. Monthly discharge October 1933 to March 1934 computed from discharge at Topock station and study of losses from Willow Beach to Topock during period of simultaneous records, April 1934 to September 1938. Diversions for irrigation above Boulder Dam. Discharge controlled at Boulder Dam since Feb. 1, 1935.

Monthly summary of discharge of Colorado River near Willow Beach, Ariz., 1933-38

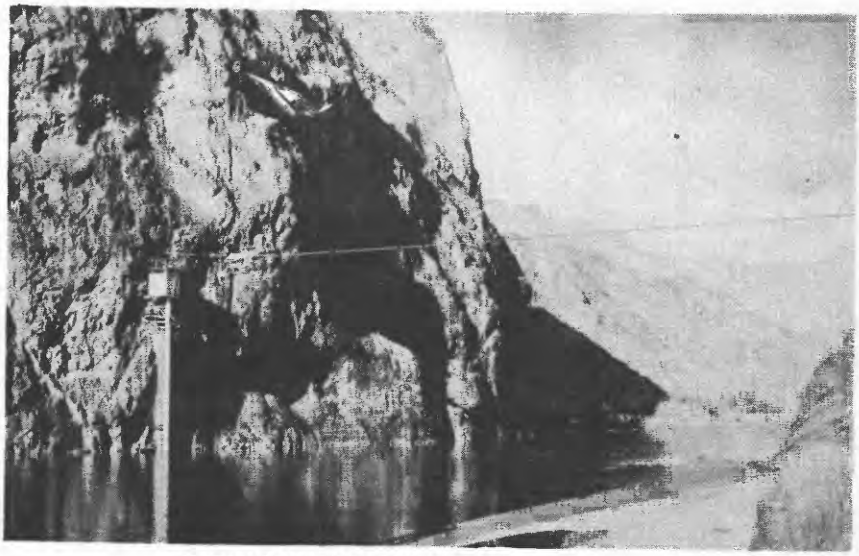
(# Estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933 a/	-	-	#7,850	243,350	482,700
November	-	-	#8,550	166,500	330,200
December	-	-	#6,600	204,600	405,800
January 1934	-	-	#6,150	190,650	378,100
February	-	-	#6,400	179,200	355,400
March	-	-	#6,400	198,400	393,500
April	12,200	5,440	7,392	221,750	439,800
May	25,100	12,900	18,060	560,000	1,111,000
June	18,800	4,100	10,610	318,280	631,300
July	3,910	2,170	2,783	86,260	171,100
August	4,820	1,940	2,631	81,560	161,800
September	9,080	2,020	3,312	99,350	197,100
Water year 1934	25,100	1,940	6,986	2,549,900	5,058,000
October 1934	4,220	2,650	3,109	96,370	191,100
November	4,310	2,970	3,519	105,560	209,400
December	5,200	3,580	4,444	137,750	273,200
Calendar year 1934	25,100	1,940	6,233	2,275,130	4,513,000
January 1935	7,560	3,380	5,306	164,480	326,200
February	6,000	152	3,820	106,951	212,100
March	7,760	5,860	7,045	218,390	433,200
April	7,720	6,710	7,297	218,910	434,200
May	15,200	6,470	9,222	285,890	567,100
June	19,100	14,400	16,530	496,000	983,800
July	15,300	9,960	11,470	355,580	705,300
August	10,500	9,840	10,180	315,640	626,100
September	10,100	9,800	9,989	299,660	594,400
Water year 1935	19,100	152	7,674	2,801,181	5,556,000
October 1935	10,000	9,680	9,834	304,840	604,600
November	9,880	7,470	9,616	288,470	572,200
December	4,950	4,760	4,876	151,150	299,800
Calendar year 1935	19,100	152	8,783	3,205,961	6,359,000
January 1936	4,940	4,750	4,841	150,060	297,600
February	6,570	4,760	5,659	164,120	325,500
March	9,860	6,370	9,102	282,160	559,700
April	11,100	9,480	9,881	296,440	588,000
May	10,300	5,940	9,098	282,050	559,400
June	11,700	8,780	10,260	307,740	610,400
July	11,600	11,000	11,320	351,000	696,200
August	11,100	9,220	9,961	308,800	612,500
September	10,000	8,130	9,341	280,240	555,800
Water year 1936	11,700	4,750	8,653	3,167,070	6,282,000

a Monthly discharge October 1933 to March 1934 and resulting yearly discharge not previously published.



A. GRAND FALLS ON LITTLE COLORADO RIVER.
Note recording gage in foreground. Photograph by W. E. Dickinson.



B. COLORADO RIVER NEAR WILLOW BEACH, ARIZ.
Note recording gage, cableway, and stayline. Photograph by W. E. Dickinson.

Monthly summary of discharge of Colorado River near Willow Beach, Ariz., 1933-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	8,380	6,430	7,378	228,730	453,700
November	6,630	5,220	6,056	181,680	360,400
December	5,480	4,810	5,128	158,980	315,300
Calendar year 1936	11,700	4,750	8,175	2,992,000	5,934,000
January 1937	5,240	3,910	4,759	147,530	292,600
February	7,150	5,030	5,619	157,330	312,100
March	9,620	6,830	8,363	259,250	514,200
April	9,810	8,820	9,314	279,420	554,200
May	9,840	8,190	8,898	275,850	547,100
June	11,000	8,420	9,872	296,170	587,400
July	11,000	10,800	10,880	337,300	669,000
August	11,300	10,300	10,800	334,800	664,100
September	10,800	8,420	9,350	280,490	556,300
Water year 1937	11,300	3,910	8,048	2,937,530	5,826,000
October 1937	8,700	7,650	8,231	255,150	506,100
November	7,900	6,140	6,946	208,380	413,300
December	7,330	6,040	6,530	202,420	401,500
Calendar year 1937	11,300	3,910	8,313	3,034,090	6,018,000
January 1938	7,190	5,860	6,347	196,750	390,200
February	7,350	5,850	6,509	182,250	361,500
March	9,660	4,580	7,567	234,570	465,300
April	11,900	8,850	9,730	291,890	579,000
May	9,750	8,590	9,015	279,460	554,300
June	15,600	8,660	10,480	314,480	623,800
July	16,900	10,500	11,060	343,000	680,300
August	11,000	9,530	10,340	320,680	636,100
September	9,650	8,890	9,348	280,430	556,200
Water year 1938	16,900	4,580	8,519	3,109,460	6,168,000

Yearly discharge of Colorado River near Willow Beach, Ariz., 1934-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1934	6,986	5,058,000	6,233	4,513,000
1935	7,674	5,556,000	8,783	6,359,000
1936	8,653	6,282,000	8,175	5,934,000
1937	8,048	5,826,000	8,313	6,018,000
1938	8,519	6,168,000		

COLORADO RIVER AT HARDYVILLE, ARIZ.

Location.- In sec. 9, T. 20 N., R. 22 W., a quarter of a mile upstream from Hardyville, 5½ miles downstream from Bulls Head, and 73 miles downstream from Boulder Dam.

Drainage area.- 169,300 square miles (1940 revision).

Records available.- May 1905 to September 1907. Gage heights and discharge measurements at Bulls Head, December 1902 to May 1903.

Extremes.- 1905-7: Maximum daily discharge, 116,000 second-feet June 20, 1906 (gage height, 15.4 feet); minimum daily discharge, 2,850 second-feet Jan. 5, 1906 (gage height, 3.35 feet).

Gage.- Staff gage on left bank a quarter of a mile upstream from Hardyville; read daily with occasional omissions, May 11, 1905, to Sept. 30, 1907. Zero of gage was 486.64 feet above mean sea level (unadjusted).

Staff gage on left bank at Bulls Head, 5½ miles upstream; read daily Dec. 5, 1902, to May 18, 1903. Zero of gage was 499.90 feet above mean sea level (unadjusted).

Remarks.- Discharge at Bulls Head and Hardyville practically identical. Continuous discharge at Bulls Head not determined, but 56 discharge measurements of probably good accuracy made at intervals of 1 to 5 days during the period, Dec. 5, 1902, to May 11, 1903. At Hardyville, 114 discharge measurements or about 4 each month at well chosen intervals were made during the period, May 17, 1905, to Oct. 6, 1907, of which 32 were above 35,000 second-feet, and 6 were above 100,000 second-feet. Physical conditions made measurement of high discharge difficult, and equipment and methods then in use tended to show too large discharge. Records probably good below about 35,000 second-feet, and fair above, but uncertainty of accuracy increases with magnitude of high discharge. Diversions for irrigation above station.

Monthly summary of discharge of Colorado River at Hardyville, Ariz., 1905-7

(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
May 11 to 31, 1905	81,920	30,410	47,370	994,830	1,973,000
June	99,800	49,840	75,760	2,272,840	4,508,000
July	45,260	14,750	25,310	784,590	1,556,000
August	18,950	6,560	11,810	366,150	726,200
September	10,850	4,515	‡6,973	209,185	414,900
October 1905	10,200	4,700	8,571	265,690	527,000
November	17,800	5,200	7,606	228,190	452,600
December	29,500	5,300	9,097	282,000	559,300
January 1906	7,700	2,850	4,826	149,620	296,800
February	6,700	5,000	5,877	164,560	326,400
March	31,800	5,600	12,260	380,000	753,700
April	55,600	21,100	31,560	946,800	1,878,000
May	93,000	28,500	64,450	1,998,000	3,963,000
June	116,000	66,000	95,310	2,859,300	5,671,000
July	62,600	27,500	40,010	1,240,200	2,460,000
August	29,000	12,500	18,380	569,700	1,130,000
September	19,500	10,800	13,350	400,600	794,600
Water year 1906	116,000	2,850	25,990	9,484,660	18,810,000
October 1906	17,800	8,200	11,670	361,790	717,600
November	12,800	8,000	9,867	296,000	587,100
December	23,100	5,500	9,257	286,980	569,200
Calendar year 1906	116,000	2,850	26,450	9,653,550	19,150,000
January 1907	9,600	6,700	8,159	252,930	501,700
February	15,100	7,850	10,820	302,860	600,700
March	29,000	12,600	16,760	519,500	1,030,000
April	45,600	21,900	31,720	951,700	1,888,000
May	102,000	26,900	44,950	1,393,500	2,764,000
June	112,000	52,000	‡85,840	2,575,300	5,108,000
July	104,000	44,000	75,280	2,333,800	4,629,000
August	50,000	17,500	32,460	1,006,400	1,996,000
September	25,800	12,700	18,420	552,500	1,096,000
Water year 1907	112,000	5,500	29,680	10,833,260	21,490,000

Yearly discharge of Colorado River at Hardyville, Ariz., 1906-7

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1906	25,990	18,810,000	26,450	19,150,000
1907	29,680	21,490,000	-	-

COLORADO RIVER NEAR TOPOCK, ARIZ.

Location.- Lat. 34°41'15", long. 114°27'45", in NW¼ sec. 13, T. 15 N., R. 21 W., Gila and Salt River meridian, in Mohave Canyon, 3 miles downstream from Topock, 40 miles upstream from Parker Dam, and 116 miles downstream from Boulder Dam, since Dec. 3, 1922.
1917-22: In E½ sec. 16, T. 7 N., R. 24 E., San Bernardino meridian, in Mohave Canyon about 1 mile upstream from later site.

Drainage area.- 172,300 square miles (1940 revision).

Records available.- January 1917 to September 1938.

Average discharge.- 17 years (water years, 1918-34), 20,260 second-feet.

Extremes.- 1917-34 (unregulated): Maximum discharge probably exceeded 200,000 second-feet June 22, 1921 (revised on basis of record at Lees Ferry); minimum discharge, 1,480 second-feet Aug. 17, 1934.
1935-38 (regulated): Maximum discharge, 18,800 second-feet July 3, 1938; minimum, 375 second-feet Feb. 14, 1935; minimum daily discharge, 422 second-feet Feb. 14, 1935.
A discharge of about 300,000 second-feet occurred about July 10, 1884 (based on determination at Lees Ferry). Records of the Atlantic and Pacific Railroad Company used in connection with construction of the Red Rock (Topock) bridge in 1889-90 show the 1884 high-water mark at elevation 492.0 feet, their datum, and also show an earlier high-water mark at elevation 500.5 feet, or 8.5 feet higher than in 1884. a/ From available data, it is estimated that the earlier discharge exceeded 400,000 second-feet, and that it probably occurred within the period 1857-68 and most likely in 1862.

Gage.- Water-stage recorder on left bank at downstream end of constricted rock-walled gorge in Mohave Canyon, 3 miles downstream from Topock, since Dec. 3, 1922. Zero of gage is 423.02 feet (general adjustment of 1929), or 423.08 feet (general adjustment of 1912) above mean sea level.
Feb. 1, 1917, to Dec. 2, 1922, water-stage recorder on right bank at upstream end of same constricted gorge in Mohave Canyon, at independent datum. Recorder frequently out of order during 1917-20; records from recorder supplemented by readings on staff gage at same site and datum, and during 1917 by readings on Weather Bureau gage at railroad bridge 2 miles upstream at independent datum.

Remarks.- Records for 1917-20 are poor, 1921-22 fair, 1923 good, and 1924-38 excellent. In general, records prior to 1924 tend to show the discharge too great above about 20,000 second-feet owing to equipment and methods then in use in making discharge measurements. The results are further complicated by continually and often radically changing relation of discharge to gage height at all stages. Consequently, the accuracy of the records prior to 1924 does not warrant detailed comparison with records at other stations for close determination of behavior of Colorado River in the intervening reaches. Although the banks at this station are of rock, the unstable character of the river bed has made frequent discharge measurements essential to reliable determination of discharge, and the accuracy of the discharge record is dependent on the accuracy of the individual measurements. Few discharge measurements were made in 1917-20; and those made in 1921-22 were not adequate for determination of continuously accurate records of discharge. More frequent measurements were made in 1923 using improved equipment and methods, and since 1924 discharge measurements have been made at intervals of 1 or 2 days using equipment and methods specially adapted to lower Colorado River. Diversions for irrigation above station. Mohave Canyon dam site is located half a mile upstream. Discharge controlled at Boulder Dam since Feb. 1, 1935. No backwater effect from Parker Dam until Nov. 4, 1938.

Monthly summary of discharge of Colorado River near Topock, Ariz., 1917-38

(* Estimated; † Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1917 a/	-	-	*6,500	201,500	400,000
February	8,500	6,000	7,329	205,200	407,000
March	14,700	9,100	10,850	336,300	667,000
April	57,300	12,300	30,700	921,100	1,827,000
May	114,000	30,900	64,790	2,008,600	3,984,000
June	140,000	58,600	98,710	2,961,400	5,874,000
July	139,000	28,100	67,320	2,087,000	4,140,000
August	34,400	12,700	19,350	600,000	1,190,000
September	15,600	9,450	11,990	†359,810	713,700
October 1917	-	-	*9,570	296,670	588,400
November	-	-	*9,100	273,000	541,500
December	-	-	*8,830	273,730	542,900
Calendar year 1917	-	-	28,830	10,524,310	20,880,000
January 1918	-	-	*8,590	266,290	528,200
February	11,800	6,400	8,296	232,300	460,800
March	40,100	10,000	16,100	499,000	989,800
April	23,300	11,000	16,990	509,600	1,011,000
May	55,100	14,100	38,240	1,185,400	2,351,000
June	92,000	32,200	66,280	1,988,400	3,944,000
July	87,500	24,000	45,140	1,399,200	2,775,000
August	24,000	7,000	15,630	484,450	960,900
September	13,500	6,000	8,768	263,050	521,600
Water year 1918	92,000	-	21,020	7,671,080	15,220,000

a Estimated discharge for January and resulting yearly discharge not previously published.

a Rowe, S. M., Red Rock Cantilever bridge; Am. Soc. Civil Eng. Trans. Vol. 25, pl. 116, p. 696, 1891.

Monthly summary of discharge of Colorado River near Topock, Ariz., 1917-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1918	11,500	9,100	9,777	303,100	601,200
November	10,100	8,600	9,400	282,000	559,300
December	9,350	7,500	8,437	261,550	518,800
Calendar year 1918	92,000	6,000	21,030	7,674,340	15,220,000
January 1919	7,200	4,100	5,665	175,600	348,300
February	8,400	6,250	7,252	203,050	402,700
March	26,200	7,200	11,660	361,450	716,900
April	41,000	16,000	23,170	†695,100	1,379,000
May	68,300	32,300	44,360	†1,375,200	2,728,000
June	77,300	26,600	44,980	†1,349,500	2,677,000
July	40,400	16,000	24,360	†755,300	1,498,000
August	37,300	5,350	16,880	†523,400	1,038,000
September	8,600	4,450	6,685	200,550	397,800
Water year 1919	77,300	4,100	17,770	6,485,800	12,860,000
October 1919	11,200	7,800	9,437	292,550	580,300
November	11,800	7,200	9,395	281,850	559,000
December	25,800	5,500	10,460	324,400	643,400
Calendar year 1919	77,300	4,100	17,910	6,537,950	12,970,000
January 1920	12,400	5,500	7,990	247,700	491,300
February	58,400	9,600	18,300	530,600	1,052,000
March	22,200	10,400	14,950	463,300	918,900
April	-	12,400	22,750	†682,500	1,354,000
May	152,000	-	76,320	†2,365,800	4,692,000
June	155,000	45,000	94,180	†2,825,400	5,604,000
July	56,000	28,000	40,150	†1,244,700	2,469,000
August	27,100	14,000	23,350	723,800	1,436,000
September	13,000	8,000	9,473	284,200	563,700
Water year 1920	155,000	5,500	28,050	10,266,800	20,360,000
October 1920	9,800	7,800	8,910	276,200	547,800
November	10,800	7,260	8,390	251,710	499,300
December	8,170	5,900	7,460	†231,250	458,700
Calendar year 1920	155,000	5,500	27,670	10,127,160	20,090,000
January 1921	8,500	6,000	6,988	216,620	429,700
February	10,000	7,700	8,982	251,500	498,800
March	19,500	10,500	14,620	453,200	898,900
April	25,500	12,800	17,150	514,400	1,020,000
May	95,300	18,700	63,050	1,954,600	3,877,000
June	b200,000	72,000	b125,000	3,750,000	b7,438,000
July	70,000	33,800	44,650	†1,384,300	2,746,000
August	66,500	11,000	35,570	1,102,700	2,187,000
September	31,600	9,000	18,710	†561,200	1,113,000
Water year 1921	b200,000	5,900	b29,990	10,947,680	b21,710,000
October 1921	14,500	7,600	9,209	285,490	566,300
November	10,500	8,100	9,414	282,410	560,200
December	19,500	9,600	10,670	330,800	656,100
Calendar year 1921	b200,000	6,000	b30,380	11,087,220	b21,990,000
January 1922	19,200	7,100	10,840	†335,970	666,400
February	19,000	7,680	11,100	310,730	616,300
March	38,000	11,000	19,050	590,400	1,171,000
April	36,000	17,000	22,470	†674,200	1,337,000
May	112,000	39,000	71,700	†2,222,700	4,409,000
June	121,000	70,000	94,560	2,836,900	5,627,000
July	66,600	11,200	30,850	956,400	1,897,000
August	23,000	11,000	15,070	467,100	926,500
September	15,000	6,360	9,356	280,670	556,700
Water year 1922	121,000	6,360	26,230	9,573,770	18,990,000
October 1922	6,550	5,600	5,971	185,110	367,200
November	10,000	6,120	7,894	236,820	469,700
December	9,700	6,300	8,563	265,450	526,500
Calendar year 1922	121,000	5,600	25,650	9,332,450	18,570,000
January 1923	7,750	6,250	7,163	222,050	440,400
February	8,700	6,150	7,446	208,500	413,600
March	9,750	8,000	8,926	276,700	548,800
April	32,700	8,500	21,720	651,650	1,293,000
May	84,000	23,200	53,650	1,663,300	3,299,000
June	102,000	63,300	86,150	2,584,400	5,126,000
July	65,000	27,500	44,050	1,365,500	2,708,000
August	35,700	18,400	26,030	806,900	1,600,000
September	82,500	11,500	23,250	697,600	1,384,000
Water year 1923	102,000	5,600	25,110	9,163,980	18,180,000

b Revised. Although the 1921 spring-flood runoff as a whole is probably shown somewhat too large, previously published daily discharge June 16-26 has been discarded as too small and the flood-crest discharge June 22 and the mean discharge for June have been estimated on the basis of the revised record for the Lees Ferry station for the period corresponding to June 16-26 at the Topock station. No discharge measurements were made at the Topock station between June 2 and July 15.

Monthly summary of discharge of Colorado River near Topock, Ariz., 1917-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	19,200	11,200	13,680	424,200	841,400
November	33,300	10,600	14,700	441,000	874,700
December	41,800	6,600	10,500	325,570	645,800
Calendar year 1923	102,000	6,150	26,490	9,667,370	19,170,000
January 1924	25,500	5,290	8,824	273,540	542,600
February	13,200	6,850	9,456	274,230	543,900
March	12,600	8,400	9,808	304,060	603,100
April	49,500	8,500	28,240	847,300	1,681,000
May	64,800	26,500	47,260	1,465,000	2,906,000
June	70,400	37,700	54,330	1,630,000	3,233,000
July	35,800	10,500	20,340	630,500	1,251,000
August	10,700	3,790	6,417	198,930	394,600
September	10,600	3,250	5,415	162,450	322,200
Water year 1924	70,400	3,250	19,060	6,976,780	13,840,000
October 1924	8,110	4,190	6,288	194,930	386,600
November	8,150	7,060	7,507	225,210	446,700
December	7,810	3,510	6,341	196,580	389,900
Calendar year 1924	70,400	3,250	17,490	6,402,730	12,700,000
January 1925	5,570	1,980	4,339	134,500	266,800
February	8,700	5,240	7,689	215,290	427,000
March	17,300	7,740	10,260	318,140	631,000
April	34,700	11,100	21,570	647,000	1,283,000
May	46,800	20,200	31,620	980,300	1,944,000
June	50,400	30,900	40,260	1,207,700	2,395,000
July	40,900	15,300	26,310	815,500	1,618,000
August	22,600	9,370	12,230	379,110	752,000
September	30,800	11,700	19,570	587,200	1,165,000
Water year 1925	50,400	1,980	16,170	5,901,460	11,700,000
October 1925	29,500	11,900	17,150	531,600	1,054,000
November	12,400	8,390	10,590	317,650	630,000
December	8,740	5,700	7,511	232,830	461,800
Calendar year 1925	50,400	1,980	17,440	6,366,820	12,630,000
January 1926	7,020	5,080	6,211	192,530	381,900
February	7,130	5,120	6,263	175,360	347,800
March	15,200	6,190	9,449	292,910	581,000
April	49,800	14,300	25,480	764,400	1,516,000
May	80,700	32,200	52,060	1,614,000	3,201,000
June	83,800	32,000	62,060	1,861,800	3,693,000
July	35,800	11,900	24,220	750,700	1,489,000
August	12,900	5,960	9,497	294,420	584,000
September	12,500	3,510	5,292	158,760	314,900
Water year 1926	83,800	3,510	19,690	7,186,960	14,250,000
October 1926	17,300	5,770	7,742	240,000	476,000
November	6,540	5,070	5,630	168,910	335,000
December	10,400	4,560	6,804	210,930	418,400
Calendar year 1926	83,800	3,510	18,420	6,724,720	13,340,000
January 1927	7,850	3,410	5,865	181,810	360,600
February	17,300	6,100	9,365	262,220	520,100
March	13,400	8,200	10,850	336,500	667,400
April	28,900	10,400	19,790	593,600	1,177,000
May	87,100	29,800	59,760	1,852,600	3,675,000
June	70,300	46,200	59,130	1,774,000	3,519,000
July	104,000	17,500	44,740	1,387,000	2,751,000
August	25,200	9,750	16,230	503,010	997,700
September	105,000	10,300	35,230	1,056,800	2,096,000
Water year 1927	105,000	3,410	23,470	8,567,380	16,990,000
October 1927	28,300	12,000	16,880	523,400	1,038,000
November	21,000	10,700	13,060	391,900	777,300
December	10,600	4,710	7,970	247,060	490,000
Calendar year 1927	105,000	3,410	24,960	9,109,900	18,070,000
January 1928	9,200	6,480	7,650	237,150	470,400
February	11,600	6,930	8,457	245,240	486,400
March	16,400	7,290	10,560	327,470	649,500
April	25,000	11,100	16,390	491,600	975,100
May	85,800	19,500	62,540	1,938,600	3,845,000
June	110,000	37,500	66,060	1,981,800	3,931,000
July	41,400	16,500	26,910	834,100	1,654,000
August	15,700	7,170	11,000	341,150	676,700
September	9,810	5,150	6,460	193,790	384,400
Water year 1928	110,000	4,710	21,180	7,753,260	15,380,000

Monthly summary of discharge of Colorado River near Topock, Ariz., 1917-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	22,500	5,070	9,172	284,320	563,900
November	16,300	7,530	9,635	289,060	573,300
December	8,940	3,260	6,452	200,000	396,700
Calendar year 1928	110,000	3,260	20,120	7,364,280	14,610,000
January 1929	6,720	3,630	5,625	174,380	345,900
February	8,720	4,990	6,305	176,550	350,200
March	33,500	6,300	14,210	440,590	873,900
April	43,200	11,500	27,800	833,990	1,654,000
May	99,100	24,300	55,580	1,723,000	3,418,000
June	100,000	62,500	80,930	2,428,000	4,816,000
July	58,800	20,800	34,120	1,057,700	2,098,000
August	57,200	12,100	35,490	1,100,200	2,182,000
September	46,200	12,400	26,980	809,300	1,605,000
Water year 1929	100,000	3,260	26,070	9,517,000	18,880,000
October 1929	26,600	11,300	15,860	491,700	975,300
November	10,900	8,140	9,804	294,120	583,400
December	8,940	5,960	7,871	243,990	483,900
Calendar year 1929	100,000	3,630	26,780	9,773,430	19,390,000
January 1930	6,900	3,410	5,509	170,790	338,800
February	11,300	3,960	7,218	202,100	400,900
March	16,000	7,950	9,889	306,560	608,100
April	42,600	8,940	24,370	730,990	1,450,000
May	43,300	20,000	31,460	975,200	1,934,000
June	64,000	36,400	50,740	1,522,200	3,019,000
July	32,600	13,200	19,730	611,600	1,213,000
August	56,000	13,800	27,010	837,400	1,661,000
September	14,200	6,220	9,728	291,840	578,900
Water year 1930	64,000	3,410	18,300	6,678,490	13,250,000
October 1930	11,100	7,170	9,591	297,310	589,700
November	9,470	7,320	8,277	248,300	492,500
December	7,170	4,200	5,790	179,500	356,000
Calendar year 1930	64,000	3,410	17,460	6,373,790	12,640,000
January 1931	5,520	3,820	4,766	147,740	293,000
February	9,410	5,430	7,387	206,840	410,300
March	9,130	6,130	7,110	220,420	437,200
April	14,000	6,300	9,029	270,880	537,300
May	30,700	12,000	17,510	542,700	1,076,000
June	30,400	14,300	24,070	722,000	1,432,000
July	17,100	3,590	8,888	275,540	546,500
August	9,270	2,970	5,687	176,310	349,700
September	14,900	2,420	4,176	125,270	248,500
Water year 1931	30,700	2,420	9,350	3,412,810	6,769,000
October 1931	18,100	5,820	9,196	285,080	565,500
November	10,700	5,960	7,077	212,300	421,100
December	5,940	2,840	4,680	145,080	287,800
Calendar year 1931	30,700	2,420	9,124	3,330,170	6,606,000
January 1932	7,440	4,710	5,650	175,160	347,400
February	44,300	4,760	14,600	423,260	839,500
March	19,700	10,100	13,800	427,900	848,700
April	40,900	15,200	28,410	852,200	1,690,000
May	96,300	28,200	58,910	1,826,300	3,622,000
June	86,000	50,200	60,550	1,816,600	3,603,000
July	65,900	15,300	37,870	1,174,100	2,329,000
August	24,600	6,390	13,440	416,590	826,300
September	43,700	4,840	12,180	365,300	724,600
Water year 1932	96,300	2,840	22,190	8,119,880	16,100,000
October 1932	8,110	4,890	5,945	184,300	365,600
November	7,350	6,330	6,875	206,250	409,100
December	7,320	3,300	5,756	178,440	353,900
Calendar year 1932	96,300	3,300	21,980	8,046,400	15,960,000
January 1933	6,130	3,480	4,777	148,080	293,700
February	6,390	3,100	5,314	148,790	295,100
March	10,700	6,130	8,928	276,760	548,900
April	11,300	6,840	8,522	255,650	507,100
May	42,200	9,950	19,690	610,450	1,211,000
June	77,300	32,600	66,340	1,990,100	3,947,000
July	46,000	9,440	22,470	696,620	1,382,000
August	11,500	3,820	7,189	222,850	442,000
September	14,200	2,820	6,626	198,790	394,300
Water year 1933	77,300	2,820	14,020	5,117,080	10,150,000

Monthly summary of discharge of Colorado River near Topock, Ariz., 1917-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	13,700	4,970	7,554	234,180	464,500
November	6,300	4,490	5,324	159,710	316,800
December	8,780	4,910	6,382	197,840	392,400
Calendar year 1933	77,300	2,820	14,080	5,139,820	10,190,000
January 1934	7,720	4,560	5,929	183,790	364,500
February	7,440	5,540	6,214	173,980	345,100
March	7,050	5,600	6,208	192,450	381,700
April	11,100	5,200	6,951	208,530	413,600
May	25,100	11,500	17,540	543,700	1,078,000
June	18,200	3,980	10,780	323,480	641,600
July	3,700	1,730	2,451	75,980	150,700
August	3,090	1,570	2,211	68,540	135,900
September	8,650	1,590	3,110	93,310	185,100
Water year 1934	25,100	1,570	6,727	2,455,490	4,870,000
October 1934	3,820	1,760	2,764	85,690	170,000
November	4,130	2,620	3,228	96,850	192,100
December	4,940	3,410	4,189	129,850	257,600
Calendar year 1934	25,100	1,570	5,962	2,176,150	4,316,000
January 1935	7,780	3,470	5,096	157,980	313,300
February	5,830	422	3,572	100,009	198,400
March	7,250	5,270	6,663	206,560	409,700
April	7,550	6,360	6,886	206,580	409,700
May	14,400	6,070	8,434	261,460	518,600
June	18,300	13,700	15,670	470,000	932,200
July	14,500	9,000	10,960	339,880	674,100
August	9,720	9,280	9,503	294,600	584,300
September	9,800	9,120	9,488	284,640	564,600
Water year 1935	18,300	422	7,217	2,634,099	5,225,000
October 1935	9,680	9,080	9,417	291,920	579,000
November	9,680	9,120	9,418	282,530	560,400
December	8,050	4,530	4,810	149,110	295,800
Calendar year 1935	18,300	422	8,343	3,045,269	6,040,000
January 1936	4,830	4,490	4,691	145,420	288,400
February	6,620	4,490	5,500	159,510	316,400
March	9,960	6,000	8,793	272,580	540,700
April	10,600	9,160	9,544	286,330	567,900
May	10,600	6,780	8,689	269,360	534,300
June	11,000	7,860	9,492	284,770	564,800
July	11,100	10,400	10,740	332,800	660,100
August	10,800	8,880	9,485	294,040	583,200
September	9,600	7,900	8,978	269,330	534,200
Water year 1936	11,100	4,490	8,300	3,037,700	6,025,000
October 1936	7,980	6,180	7,123	220,810	438,000
November	6,800	4,900	5,840	175,190	347,500
December	5,460	4,590	4,870	150,970	299,400
Calendar year 1936	11,100	4,490	7,817	2,861,110	5,675,000
January 1937	5,820	3,630	4,662	144,510	286,600
February	6,470	4,010	5,145	144,060	285,700
March	9,440	6,650	8,040	249,090	494,400
April	9,320	8,480	8,899	266,980	529,500
May	9,680	7,590	8,580	265,980	527,600
June	10,800	7,900	9,326	279,780	554,900
July	11,000	10,100	10,450	323,800	642,200
August	11,000	9,600	10,400	322,500	639,700
September	10,500	7,820	8,927	267,800	531,200
Water year 1937	11,000	3,630	7,703	2,811,470	5,577,000
October 1937	8,290	7,250	7,874	244,100	484,200
November	7,670	6,070	6,780	203,400	403,400
December	7,060	5,670	6,319	195,880	388,500
Calendar year 1937	11,000	3,630	7,967	2,907,880	5,768,000
January 1938	6,990	5,220	6,054	187,680	372,300
February	6,910	5,280	6,239	174,700	346,500
March	9,480	5,140	7,333	227,320	450,900
April	11,600	8,440	9,498	284,940	565,200
May	9,480	8,210	8,758	271,510	538,500
June	15,400	8,440	9,924	297,720	590,500
July	16,900	9,480	10,740	333,080	660,700
August	10,900	9,120	10,150	314,720	624,200
September	9,480	8,560	9,116	273,480	542,400
Water year 1938	16,900	5,140	8,243	3,008,530	5,967,000

Yearly discharge of Colorado River near Topock, Ariz., 1917-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1917			28,830	20,880,000
1918	21,020	15,220,000	21,030	15,220,000
1919	17,770	12,860,000	17,910	12,970,000
1920	28,050	20,360,000	27,670	20,090,000
1921	a29,990	a21,710,000	a30,380	a21,990,000
1922	26,230	18,990,000	25,650	18,570,000
1923	25,110	18,180,000	26,490	19,170,000
1924	19,060	13,840,000	17,490	12,700,000
1925	16,170	11,700,000	17,440	12,630,000
1926	19,690	14,250,000	18,420	13,340,000
1927	23,470	16,990,000	24,960	18,070,000
1928	21,180	15,380,000	20,120	14,610,000
1929	26,070	18,880,000	26,780	19,390,000
1930	18,300	13,250,000	17,460	12,640,000
1931	9,350	6,769,000	9,124	6,605,000
1932	22,190	16,100,000	21,980	15,960,000
1933	14,020	10,150,000	14,080	10,190,000
1934	6,727	4,870,000	5,962	4,316,000
1935	7,217	5,225,000	8,343	6,040,000
1936	8,300	6,025,000	7,817	5,675,000
1937	7,703	5,577,000	7,967	5,768,000
1938	8,243	5,967,000		

a Revised.

WILLIAMS RIVER AT PLANET, ARIZ. [a/]

Location.- Lat. 34°16', long. 113°59', in NE¼ sec. 36, T. 11 N., R. 17 W., 1 mile west of Planet, and 12 miles upstream from mouth.

Drainage area.- 5,140 square miles.

Records available.- October 1910 to December 1912 (gage heights), January 1913 to December 1915, and October 1928 to September 1936.
Miscellaneous discharge measurement made in 1910.

Average discharge.- 10 years (water years, 1929-38), 140 second-feet.

Extremes.- 1928-38: Maximum discharge, 92,500 second-feet Feb. 7, 1937 (gage height, 13.1 feet), from rating curve extended above 51,000 second-feet on basis of velocity-area study; minimum, 7 second-feet Sept. 30, Oct. 1, 1934.
Higher floods in earlier years are indicated by driftwood floodmarks discovered in 1925, 1928, and 1937, and by testimony of local residents who witnessed the floods. Roughly estimated flood crest discharge, 125,000 second-feet about Feb. 16, 1927, 175,000 second-feet about Jan. 19, 1916, and 200,000 second-feet about Feb. 21, 1891.

Gage.- Water-stage recorder on left bank at narrows at head of canyon a mile downstream from Planet since Oct. 1, 1928. Zero of gage is 556.33 feet above mean sea level (general adjustment of 1929).
Sept. 26, 1910, to Dec. 31, 1915, staff gage on left bank at same site and approximately same datum, supplemented by staff gage directly opposite on right bank at about the same datum; read once daily to half-tenths.

Remarks.- Records for low water good, others fair, except those for 1913-15 above 250 second-feet which are doubtful. During 1910-15, 21 discharge measurements were made, of which only four were greater than 25 second-feet, and the highest was 226 second-feet in 1913. Since 1928 frequent discharge measurements have been made at all practicable stages, with several measurements each day during some of the more important floods. Ratings fairly well defined up to about 50,000 second-feet and extended above. Williams River is subject to violent floods of short duration, and when in flood carries large quantities of sand and gravel, resulting in a particularly unstable stream bed which changes radically during floods and permits considerable under-flow except in the canyon sections where bedrock is closer to the surface. Except during periods of storm runoff the surface flow at this station rises less than a mile upstream, and in the open valley upstream the river bed is dry most of the time. Minor diversions for irrigation in the higher valleys of the basin.

Monthly summary of discharge of Williams River at Planet, Ariz., 1913-15, 1928-38

(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1913	18	16	17.5	542	1,080
February	1,000	16	93.5	2,618	5,190
March	1,200	30	205	6,357	12,610
April	30	24	26.5	794	1,570
May	22	17	19.5	604	1,200
June	18	17	17.5	525	1,040
July	110	16	21.5	667	1,320
August	18	16	16.5	512	1,020
September	170	16	22.5	675	1,340
October 1913	30	16	17.5	544	1,080
November	16	16	16.0	480	952
December	16	16	16.0	496	984
Calendar year 1913	1,200	16	40.6	14,814	29,390
January 1914	1,950	16	199	6,178	12,250
February	6,300	145	908	25,415	50,410
March	430	30	59.5	1,845	3,660
April	30	20	26.0	780	1,550
May	26	21	23.6	731	1,450
June	28	24	25.3	760	1,510
July	24	24	24.0	744	1,480
August	24	24	24.0	744	1,480
September	24	22	23.1	692	1,370
Water year 1914	6,300	16	108	39,409	78,180
October 1914	100	22	33.0	1,022	2,030
November	34	22	26.4	792	1,570
December	47	22	29.8	925	1,830
Calendar year 1914	6,300	16	111	40,628	80,590
January 1915	8,100	15	379	11,747	23,300
February	7,220	50	1,072	30,025	59,550
March	335	25	106	3,294	6,530
April	48	14	31.3	940	1,860
May	270	14	122	3,773	7,480
June	135	36	95.3	2,858	5,670
July	210	14	‡35.4	1,096	2,170
August	36	14	28.5	885	1,760
September	120	14	33.0	991	1,970
Water year 1915	8,100	14	160	58,348	115,700

Note.- Maximum and minimum discharge January 1913 to December 1914 not previously published.

a Published as Bill Williams River near Swansea, Ariz., 1910-12, and as Williams River near Swansea, Ariz., 1913-15.

Monthly summary of discharge of Williams River at Planet, Ariz., 1913-15, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	21	14	17.1	529	1,050
November	23	21	22.2	666	1,320
December	23	14	19.4	600	1,190
Calendar year 1915	8,100	14	157	57,404	113,800
October 1928	22	14	19.1	591	1,170
November	26	17	22.0	659	1,310
December	21	16	17.5	543	1,080
January 1929	20	14	17.7	550	1,090
February	21	17	19.0	532	1,060
March	22	16	19.7	612	1,210
April	21	15	17.2	516	1,020
May	20	15	17.6	545	1,080
June	21	12	16.7	502	996
July	20	13	15.4	478	948
August	364	16	57.3	1,775	3,520
September	3,570	17	280	8,403	16,670
Water year 1929	3,570	12	43.0	15,706	31,150
October 1929	19	14	16.1	500	992
November	20	16	18.6	558	1,110
December	24	19	20.7	643	1,280
Calendar year 1929	3,570	12	42.8	15,614	30,980
January 1930	19	16	17.1	531	1,050
February	20	16	17.1	479	950
March	1,040	15	124	3,853	7,640
April	22	10	14.4	432	857
May	23	10	17.5	544	1,080
June	21	12	16.4	491	974
July	18	12	14.7	455	902
August	313	10	34.5	1,070	2,120
September	5,530	10	235	7,063	14,010
Water year 1930	5,530	10	45.5	16,619	32,960
October 1930	28	15	17.1	529	1,050
November	162	14	21.9	658	1,310
December	18	14	15.5	479	950
Calendar year 1930	5,530	10	45.4	16,584	32,890
January 1931	17	13	15.9	493	978
February	3,450	14	398	11,138	22,090
March	20	14	17.5	541	1,070
April	148	14	33.4	1,001	1,990
May	46	15	23.5	729	1,450
June	22	12	17.5	524	1,040
July	59	10	17.8	551	1,090
August	12,400	33	1,045	32,384	64,230
September	1,310	20	196	5,883	11,670
Water year 1931	12,400	10	150	54,910	108,900
October 1931	34	16	22.8	708	1,400
November	24	16	19.3	579	1,150
December	1,430	15	224	6,951	13,790
Calendar year 1931	12,400	10	168	61,482	121,950
January 1932	398	15	79.9	2,477	4,910
February	30,800	19	4,681	135,760	269,300
March	1,920	30	360	11,149	22,110
April	41	15	24.1	723	1,430
May	24	15	17.7	548	1,090
June	20	12	16.2	486	964
July	27	11	17.9	556	1,100
August	55	14	23.1	717	1,420
September	20	10	15.9	476	944
Water year 1932	30,800	10	440	161,130	319,600
October 1932	25	15	19.6	607	1,200
November	26	17	21.8	654	1,300
December	25	18	22.1	684	1,360
Calendar year 1932	30,800	10	423	154,837	307,100
January 1933	28	14	20.2	625	1,240
February	22	18	20.0	560	1,110
March	68	16	25.6	793	1,570
April	18	14	15.9	476	944
May	38	14	20.3	628	1,250
June	18	14	15.0	450	893
July	16	11	12.9	401	795
August	16	12	13.5	419	831
September	26	11	13.1	393	780
Water year 1933	68	11	18.3	6,690	13,270

Note.- Record October to December 1915 not previously published.

Monthly summary of discharge of Williams River at Planet, Ariz., 1913-15, 1928-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	17	13	13.2	410	813
November	15	13	13.2	397	787
December	14	13	13.4	416	825
Calendar year 1933	68	11	16.4	5,958	11,840
January 1934	13	13	13.0	403	799
February	14	12	12.8	359	712
March	14	11	12.6	391	776
April	13	11	12.2	366	726
May	12	10	11.0	341	676
June	12	9	10.5	316	627
July	11	8	9.5	296	587
August	365	9	51.6	1,599	3,170
September	257	8	19.4	581	1,150
Water year 1934	365	8	16.1	5,875	11,650
October 1934	10	8	9.2	284	563
November	11	9	10.2	307	609
December	405	10	32.5	1,007	2,000
Calendar year 1934	405	8	17.1	6,250	12,400
January 1935	992	11	159	4,920	9,760
February	7,120	15	1,096	30,678	60,850
March	2,150	27	416	12,882	25,550
April	33	21	23.0	691	1,370
May	25	23	23.6	731	1,450
June	23	21	22.0	660	1,310
July	21	20	20.1	624	1,240
August	326	19	38.6	1,196	2,370
September	410	18	53.1	1,594	3,160
Water year 1935	7,120	8	152	55,574	110,200
October 1935	20	17	18.1	562	1,110
November	19	17	18.2	545	1,080
December	19	18	18.1	560	1,110
Calendar year 1935	7,120	11	152	55,643	110,400
January 1936	18	18	18.0	558	1,110
February	96	17	21.4	620	1,230
March	18	16	16.8	520	1,030
April	16	13	14.5	436	865
May	15	11	13.0	404	801
June	14	12	13.0	389	772
July	1,120	10	80.2	2,486	4,930
August	956	13	105	3,250	6,450
September	48	12	22.2	667	1,320
Water year 1936	1,120	10	30.0	10,997	21,810
October 1936	23	13	14.6	454	900
November	18	14	16.1	482	956
December	245	13	30.7	953	1,890
Calendar year 1936	1,120	10	30.7	11,219	22,250
January 1937	111	10	41.0	1,271	2,520
February	44,700	10	3,766	105,435	209,100
March	3,340	63	445	13,801	27,370
April	196	21	52.0	1,560	3,090
May	30	17	22.0	682	1,350
June	30	14	20.8	625	1,240
July	27	18	21.0	650	1,290
August	45	16	19.1	591	1,170
September	222	17	34.8	1,045	2,070
Water year 1937	44,700	10	349	127,549	252,900
October 1937	143	19	27.4	850	1,690
November	27	16	19.2	576	1,140
December	22	17	19.7	610	1,210
Calendar year 1937	44,700	10	350	127,696	253,240
January 1938	19	17	17.7	550	1,090
February	42	17	20.1	564	1,120
March	24,100	24	1,634	50,665	100,500
April	25	17	20.4	613	1,220
May	19	13	15.8	491	974
June	46	16	18.3	549	1,090
July	27	14	18.2	564	1,120
August	17	13	15.0	464	920
September	16	15	15.6	468	928
Water year 1938	24,100	13	156	56,964	113,000

Yearly discharge of Williams River at Planet, Ariz., 1913-15, 1929-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1913	-	-	40.6	29,390
1914	108	78,180	111	80,590
1915	160	115,700	157	113,800
1929	43.0	31,150	42.8	30,980
1930	45.5	32,960	45.4	32,890
1931	150	108,900	168	121,950
1932	440	319,600	423	307,100
1933	18.3	13,270	16.4	11,840
1934	16.1	11,650	17.1	12,400
1935	152	110,200	152	110,400
1936	30.0	21,810	30.7	22,250
1937	349	252,900	350	253,240
1938	156	113,000	-	-

HAVASU LAKE NEAR PARKER DAM, ARIZ.-CALIF.[a]

Location.- Lat. 34°19', long. 114°09', in SW¼ sec. 28, T. 3 N., R. 27 E., San Bernardino meridian, at intake pumping plant of Metropolitan Water District of Southern California, a mile upstream from Williams River, and 1.8 miles upstream from Parker Dam which is 156 miles downstream from Boulder Dam.

Drainage area.- 178,800 square miles at Parker Dam (1940 revision).

Records available.- July to September 1938.

Extremes.- 1938: Maximum available contents, 35,600 acre-feet July 22 (elevation, 407.39 feet). No storage prior to July 1.

Gage.- Water-stage recorder on right bank at downstream end of river face of concrete structure of intake pumping plant of Metropolitan Water District of Southern California. Datum of gage is at mean sea level (general adjustment of 1912), or 0.545 foot above mean sea level (general adjustment of 1929).

Remarks.- All elevations shown are in agreement with the general adjustment of 1929. Storage was begun July 1, 1938. The capacity is 216,000 acre-feet between elevations 440.54 feet and 450.54 feet, the range of normal operation, and drawdown below elevation 440.54 feet is not to be permitted except in emergency. The total capacity of the reservoir, 716,600 acre-feet, comprises the dead storage, 28,600 acre-feet, below elevation 400.54 feet (sills of regulating or spillway gates in Parker Dam); and the capacity for available storage, 688,000 acre-feet, between elevations 400.54 feet and 450.54 feet (the planned maximum elevation of the water surface).

Havasu Lake is the reservoir formed by Parker Dam in the Colorado River. Its primary purpose is to facilitate the diversion of water by pumping to the Colorado River Aqueduct of the Metropolitan Water District of Southern California for municipal water supply for Los Angeles and other coastal cities. Actual pumping and diversion to the aqueduct were not begun until January 1939. There are no other appreciable diversions of water from the Colorado River between Boulder Dam and Parker Dam, and no surface inflow other than that from Williams River except for occasional storm runoff from the normally dry washes of the region. Havasu Lake also provides capacity for reregulation of the diurnal variation in flow which may result from power plant operation at Boulder Dam, for contemplated power development at Parker Dam, and to a limited extent, for partial control of flash floods of short duration resulting from storms over the drainage basin below Boulder Dam.

Elevation, in feet, and available contents, in acre-feet, of Havasu Lake near Parker Dam, Ariz.-Calif., at 12 p.m. mountain standard time, on last day of each month

	Elevation	Contents
July	406.40	29,700
August	405.84	26,300
September	405.60	24,900

a Previously published as Parker Reservoir near Parker Dam, Calif.

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COLORADO RIVER BELOW PARKER DAM, ARIZ.-CALIF. [a]

Location.- Lat. 34°15'30", long. 114°09'10", in NE¼SW¼ sec. 16, T. 2 N., R. 27 E., San Bernardino base and meridian, 4.1 miles downstream from Parker Dam, 11 miles northeast of Parker, Ariz., and 160 miles downstream from Boulder Dam.

Drainage area.- 178,800 square miles(1940 revision).

Records available.- February 1934 to September 1934 (gage heights only), October 1934 to September 1938.

Average discharge.- 4 years (water years, 1935-38), 7,914 second-feet.

Extremes.- 1934-38: Maximum discharge, 42,400 second-feet Feb. 8, 1937 (gage height, 33.07 feet); minimum, 250 second-feet July 1, 1938 (gage height, 20.09 feet) resulting from temporary stoppage of flow at Parker Dam when construction diversion tunnel was closed; minimum daily discharge, 1,440 second-feet Feb. 15, 1935.

Gage.- Water-stage recorder on right bank since Feb. 12, 1934. Zero of gage is 346.16 feet (general adjustment of 1929) or 345.61 feet (general adjustment of 1912) above mean sea level.

Remarks.- Records excellent. Discharge measurements, using equipment and methods particularly adapted to lower Colorado River, were made almost daily, with additional measurements on days of important change in flow, since January 1935. Prior to that time few discharge measurements were made. Monthly discharge October to December 1934 computed from comparison with Colorado River near Topock and Williams River at Planet using relations established prior to interference by Parker Dam. Discharge completely regulated at Boulder Dam since Feb. 1, 1935, and reregulated at Parker Dam since July 1, 1938. No regulation below Boulder Dam prior to closing of Parker Dam, except that flood crests from Williams River in February 1937 and March 1938 were materially reduced by detention behind temporary construction works at Parker Dam. Diversions for irrigation above and below station.

Monthly summary of discharge of Colorado River below Parker Dam, Ariz.-Calif., 1934-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1934	-	-	2,730	84,630	167,900
November	-	-	3,200	96,000	190,400
December	-	-	4,180	129,580	257,000
January 1935	7,700	3,530	5,224	161,940	321,200
February	14,800	1,440	4,771	133,590	265,000
March	8,670	5,220	7,106	220,280	436,900
April	7,480	6,540	7,085	212,550	421,600
May	14,000	6,010	8,202	254,270	504,300
June	17,600	13,600	15,540	466,200	924,700
July	14,100	8,970	10,820	335,340	665,100
August	9,770	9,070	9,363	290,250	575,700
September	9,910	8,940	9,299	278,980	553,300
Water year 1935	17,600	1,440	7,296	2,663,610	5,283,000
October 1935	9,700	8,970	9,275	287,520	570,300
November	9,540	9,020	9,290	278,690	552,800
December	9,110	4,460	4,886	151,460	300,400
Calendar year 1935	17,600	1,440	8,414	3,071,070	6,091,000
January 1936	4,760	4,520	4,646	144,020	285,700
February	6,750	4,520	5,465	158,490	314,400
March	9,820	6,020	8,686	269,270	534,100
April	10,400	8,980	9,456	283,690	562,700
May	10,600	7,360	8,704	269,820	535,200
June	10,700	5,950	9,286	278,590	552,600
July	11,600	10,300	10,680	331,200	656,900
August	11,000	8,610	9,549	296,030	587,200
September	9,550	7,750	8,834	265,020	525,700
Water year 1936	11,600	4,460	8,234	3,013,800	5,978,000
October 1936	7,750	6,080	7,044	218,360	433,100
November	6,480	4,850	5,746	172,380	341,900
December	5,440	4,580	4,878	151,220	299,900
Calendar year 1936	11,600	4,520	7,754	2,838,090	5,629,000
January 1937	5,850	3,960	4,641	143,870	285,400
February	39,700	4,150	8,508	238,210	472,500
March	11,800	6,890	8,466	262,510	520,700
April	9,290	8,570	8,926	267,780	531,100
May	9,690	7,580	8,566	265,560	526,700
June	10,700	7,850	9,181	275,420	546,300
July	10,900	10,200	10,470	324,600	643,600
August	10,800	9,560	10,290	318,920	632,600
September	10,600	7,860	8,950	268,510	532,600
Water year 1937	39,700	3,960	7,965	2,907,340	5,767,000

a Published as Colorado River near Parker, Ariz., 1934-37.

Monthly summary of discharge of Colorado River below Parker Dam, Ariz.-Calif., 1934-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1937	8,200	7,100	7,841	243,070	482,100
November	7,610	6,040	6,666	199,970	396,600
December	6,780	5,630	6,172	191,330	379,500
Calendar year 1937	39,700	3,960	8,218	2,999,750	5,950,000
January 1938	6,950	5,280	6,008	186,240	369,400
February	6,780	5,470	6,159	172,460	342,100
March	31,000	5,660	8,656	268,350	532,300
April	11,400	8,250	9,333	279,980	555,300
May	9,440	8,000	8,654	268,270	532,100
June	14,400	8,210	9,615	288,440	572,100
July	12,100	1,890	9,780	303,170	601,300
August	11,500	8,920	9,912	307,270	609,500
September	9,250	8,480	8,975	269,240	534,000
Water year 1938	31,000	1,890	8,158	2,977,790	5,906,000

Yearly discharge of Colorado River below Parker Dam, Ariz.-Calif., 1935-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1935	7,298	5,283,000	8,414	6,091,000
1936	8,234	5,978,000	7,754	5,629,000
1937	7,965	5,767,000	8,218	5,950,000
1938	8,158	5,906,000	-	-

DIVERSIONS FROM COLORADO RIVER TO COLORADO RIVER INDIAN RESERVATION AT PARKER, ARIZ.

Location.- Pumping plant and canal divert water from left side of Colorado River in SE¼ sec. 2, T. 9 N., R. 20 W., Gila and Salt River meridian, 1 mile downstream from railroad bridge at Parker, and 17 miles downstream from Parker Dam, for irrigation on Colorado River Indian Reservation.

Records available.- 1915-36 (calendar-year discharge only) and January 1937 to September 1938 (monthly discharge).

Determination of discharge.- Discharge computed from rated pumps and checked by current meter measurements and Parshall flume in later years.

Cooperation.- Records of diversions in acre-feet and general information of earlier diversions furnished by the Irrigation Service of the Office of Indian Affairs.

Remarks.- The first actual diversion from Colorado River for irrigation in this vicinity was made on July 4, 1870, by canal with gravity heading, and diversion was possible only during higher stages of the river. Minor diversions by both gravity and pumping continued thereafter. About 1898, a 40-horsepower steam engine and 15-inch centrifugal pump were installed and operated until a larger pumping plant was completed in 1912. The plant was enlarged again in 1918.

Monthly summary of diversions from Colorado River to Colorado River Indian Reservation at Parker, Ariz., 1937-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1937	-	-	0	-	0
February	-	-	9.3	-	518
March	-	-	31.6	-	1,940
April	-	-	70.9	-	4,220
May	-	-	49.6	-	3,050
June	-	-	80.7	-	4,800
July	-	-	101	-	6,210
August	-	-	117	-	7,200
September	-	-	74.5	-	4,430
October 1937	-	-	4.7	-	287
November	-	-	9.2	-	550
December	-	-	6.4	-	395
Calendar year 1937	-	-	46.4	-	33,600
January 1938	-	-	7.8	-	481
February	-	-	15.1	-	838
March	-	-	24.6	-	1,510
April	-	-	52.9	-	3,150
May	-	-	50.2	-	3,090
June	-	-	52.1	-	3,100
July	-	-	71.3	-	4,390
August	-	-	83.3	-	5,120
September	-	-	43.1	-	2,570
Water year 1938	-	-	35.2	-	25,480

Yearly diversions from Colorado River to Colorado River Indian Reservation at Parker, Ariz., 1915-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1915	-	-	10.1	7,290
1916	-	-	12.9	9,380
1917	-	-	13.0	9,440
1918	-	-	22.1	16,010
1919	-	-	25.5	18,500
1920	-	-	28.0	20,350
1921	-	-	21.2	15,340
1922	-	-	25.7	18,620
1923	-	-	32.4	23,460
1924	-	-	35.0	25,440
1925	-	-	35.9	26,000
1926	-	-	45.5	32,960
1927	-	-	38.2	27,680
1928	-	-	41.8	30,330
1929	-	-	40.1	29,040
1930	-	-	38.2	27,640
1931	-	-	34.5	25,000
1932	-	-	29.5	21,440
1933	-	-	24.9	18,010
1934	-	-	29.3	21,190
1935	-	-	32.1	23,230
1936	-	-	41.8	30,360
1937	-	-	46.4	33,600
1938	35.2	25,480	-	-

DIVERSIONS FROM COLORADO RIVER TO PALO VERDE VALLEY, NEAR BLYTHE, CALIF.
(PALO VERDE CANAL NEAR BLYTHE, CALIF.)

Location.- Palo Verde canal diverts water from right side of Colorado River in NE¼ sec. 19, T. 5 S., R. 24 E., San Bernardino base and meridian, 10 miles northeast of Blythe, and 58 miles downstream from Parker Dam, for irrigation in Palo Verde Valley.

Records available.- January 1922 to December 1923 and January 1925 to September 1938.

Determination of discharge.- Flow diverted at intake determined from gage heights and discharge measurements of canal near its head. In 1938 there was a water-stage recorder in SW¼ sec. 19, T. 5 S., R. 24 E., below settling basin, three-quarters of a mile from intake; no information is available concerning date of installation of recording gage, nor of gages previously used. Net diversions determined by deducting from flow diverted at intake the estimated waste water returned to the river through several wasteways downstream from the canal gage. Waste water was estimated from some discharge measurements, reports of ditch riders, and some individual estimates by the irrigation district manager.

Cooperation.- Monthly and yearly records computed by the Geological Survey from records of daily intake diversions in second-feet furnished by Palo Verde Irrigation District. Estimates of waste water prepared by the Geological Survey on the basis of information furnished by Palo Verde Irrigation District.

Remarks.- The first water used for irrigation in Palo Verde Valley is said to have been diverted about 1879 from a slough known as Olive Lake which was fed indirectly from Colorado River. About 1908, direct diversion from the river was begun at an intake at the present site; and in 1916 the canal was enlarged to present size. Changes in location and elevation of the river channel relative to the irrigated areas of the valley over a period of years have affected conditions of diversion and of return flow. Floods in Colorado River in early years submerged the whole valley area, but in recent years the developed areas have been protected by levees which extend the whole length of the valley. Drainage water collected in the protected area and returned to the river downstream from the levee is not included with waste water used in computing the net diversions.

Monthly summary of diversions from Colorado River to Palo Verde Valley, near Blythe, Calif., 1922-23, 1925-38

(* Estimated; † Partly estimated; ‡ Corrected)

Month	Diversions at intake					Estimated waste water	Net diversions
	Discharge in second-feet			Runoff			
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet	Acre-feet	Acre-feet
January 1922	106	0	19.9	616	1,230	460	770
February	-	-	*50	1,400	2,780	1,110	1,670
March	344	34	145	4,491	8,910	1,720	7,190
April	416	0	257	7,719	15,310	1,840	13,470
May	387	210	272	8,434	16,730	3,650	13,080
June	474	175	342	10,259	20,350	3,570	16,780
July	536	214	419	12,995	25,780	2,410	23,370
August	388	134	241	7,473	14,820	1,580	13,240
September	251	88	159	4,759	9,440	1,220	8,220
October 1922	187	88	134	4,148	8,230	1,230	7,000
November	108	35	66.0	1,981	3,930	1,150	2,780
December	87	39	57.7	1,789	3,550	1,110	2,440
Calendar year 1922	586	0	181	66,066	131,100	21,050	110,000
January 1923	99	50	73.6	2,282	4,530	1,230	3,300
February	193	60	113	3,152	6,250	1,110	5,140
March	316	85	235	7,277	14,430	1,230	13,200
April	532	104	335	10,050	19,950	1,890	18,060
May	458	124	315	9,768	19,370	3,310	16,060
June	515	164	336	10,066	19,970	3,570	16,400
July	721	459	539	†16,711	33,150	3,330	29,820
August	661	385	521	†16,156	32,040	2,440	29,600
September	-	-	*300	9,000	17,850	1,830	16,020
Water year 1923	721	35	253	92,390	183,200	23,430	159,800
October 1923	212	40	133	†4,138	8,210	1,090	7,120
November	149	0	26.3	788	1,560	280	1,280
December	60	0	52.3	†1,620	3,210	1,160	2,050
Calendar year 1923	721	0	249	91,018	180,500	22,470	158,000
January 1925	-	-	*60	1,860	3,690	1,230	2,460
February	-	-	*100	2,800	5,550	1,110	4,440
March	554	137	266	†8,253	16,370	1,280	15,090
April	803	0	448	13,444	26,670	1,780	24,890
May	685	390	492	†15,259	30,270	2,520	27,750
June	871	0	601	†18,017	35,740	2,860	32,880
July	903	521	692	†21,439	42,520	2,220	40,300
August	753	339	613	19,016	37,720	1,360	36,360
September	632	0	292	8,758	17,370	1,510	15,860

Monthly summary of diversions from Colorado River to Palo Verde Valley, near Blythe, Calif., 1922-23, 1925-38--Continued

Month	Diversions at intake					Estimated waste water	Net diversions
	Discharge in second-feet			Runoff			
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet	Acre-feet	Acre-feet
October 1925	218	0	63.0	†1,953	3,870	620	3,250
November	139	0	68.0	†2,039	4,040	790	3,250
December	160	0	31.2	968	1,920	320	1,600
Calendar year 1925	903	0	312	113,806	225,700	17,600	208,100
January 1926	126	0	79.8	2,474	4,910	990	3,920
February	-	-	*150	4,200	8,330	1,110	7,220
March	527	188	387	11,999	23,800	1,300	22,500
April	451	100	305	9,152	18,150	2,110	16,040
May	605	57	394	12,212	24,220	3,450	20,770
June	750	130	457	13,711	27,200	3,400	23,800
July	739	477	594	18,415	36,530	2,090	34,440
August	707	378	525	16,274	32,280	1,240	31,040
September	450	158	283	8,484	16,830	1,190	15,640
Water year 1926	750	0	279	101,881	202,100	18,610	183,500
October 1926	367	73	157	4,869	9,660	1,230	8,430
November	180	60	140	4,214	8,360	1,190	7,170
December	161	0	27.8	863	1,710	320	1,390
Calendar year 1926	750	0	293	106,867	212,000	19,620	192,400
January 1927	147	0	74.2	†2,300	4,560	1,050	3,510
February	196	132	155	†4,350	8,630	1,220	7,410
March	416	154	290	8,988	17,830	1,280	16,550
April	527	282	404	12,108	24,020	1,770	22,250
May	456	208	335	10,381	20,590	3,530	17,060
June	654	231	419	12,558	24,910	3,530	21,380
July	739	416	571	17,706	35,120	2,850	32,270
August	779	334	541	16,778	33,280	1,610	31,670
September	746	173	449	13,470	26,720	2,270	24,450
Water year 1927	779	0	297	108,585	215,400	21,850	193,500
October 1927	305	18	90.9	2,819	5,590	1,520	4,070
November	247	52	140	4,195	8,320	1,320	7,000
December	157	17	68.7	2,129	4,220	1,050	3,170
Calendar year 1927	779	0	295	107,782	213,800	23,000	190,800
January 1928	126	27	62.5	1,939	3,850	980	2,870
February	226	40	96.6	2,800	5,550	1,090	4,460
March	306	59	200	6,185	12,270	1,290	10,980
April	614	220	364	10,905	21,630	1,570	20,060
May	642	180	370	11,458	22,730	3,490	19,240
June	542	262	361	10,828	21,480	3,360	18,120
July	618	201	375	11,622	23,050	2,270	20,780
August	448	191	322	9,979	19,790	1,330	18,460
September	503	175	238	7,138	14,160	1,190	12,970
Water year 1928	642	17	224	81,997	162,600	20,460	142,200
October 1928	516	80	247	7,651	15,180	1,310	13,870
November	188	58	88.9	2,668	5,290	1,220	4,070
December	163	47	75.6	2,344	4,650	1,150	3,500
Calendar year 1928	642	27	234	85,517	169,600	20,250	149,400
January 1929	174	31	90.2	2,795	5,540	1,190	4,350
February	377	0	136	3,809	7,560	720	6,840
March	434	163	307	9,528	18,900	1,550	17,350
April	470	225	340	10,214	20,260	2,230	18,030
May	400	217	319	9,874	19,580	3,210	16,370
June	652	179	368	11,043	21,900	3,570	18,330
July	749	412	590	18,297	36,290	2,650	33,640
August	751	227	456	14,130	28,030	2,720	25,310
September	547	131	370	11,094	22,000	2,200	19,800
Water year 1929	751	0	283	103,447	205,200	23,720	181,500
October 1929	326	0	191	5,908	11,720	1,470	10,250
November	175	0	78.8	2,365	4,690	890	3,800
December	173	0	85.7	2,656	5,270	990	4,280
Calendar year 1929	751	0	279	101,713	201,700	23,390	178,400
January 1930	138	0	91.5	2,838	5,630	1,150	4,480
February	320	0	186	5,194	10,300	990	9,310
March	420	0	262	8,119	16,100	1,230	14,870
April	403	272	340	10,203	20,240	2,070	18,170
May	368	161	252	7,825	15,520	2,540	12,980
June	432	185	303	9,076	18,000	3,400	14,600
July	590	288	459	14,214	28,190	1,820	26,370
August	531	289	415	12,855	25,500	2,270	23,230
September	493	100	329	9,858	19,550	1,240	18,310
Water year 1930	590	0	250	91,111	180,700	20,060	160,600

Monthly summary of diversions from Colorado River to Palo Verde Valley, near Blythe, Calif., 1922-23, 1925-38--Continued

Month	Diversions at intake					Estimated waste water	Net diversions
	Discharge in second-feet			Runoff			
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet	Acre-feet	Acre-feet
October 1930	277	71	168	5,217	10,350	1,230	9,120
November	229	0	91.3	2,738	5,430	870	4,560
December	137	30	78.4	2,430	4,820	1,120	3,700
Calendar year 1930	590	0	248	90,567	179,600	19,930	159,700
January 1931	74	50	60.1	1,864	3,700	1,230	2,470
February	150	0	74.1	2,074	4,110	830	3,280
March	551	63	270	8,367	16,600	1,230	15,370
April	462	110	361	10,819	21,460	1,220	20,240
May	379	223	314	9,744	19,330	1,720	17,610
June	555	158	371	11,124	22,060	2,050	20,010
July	654	370	534	16,567	32,860	1,300	31,560
August	560	25	337	10,439	20,710	1,190	19,520
September	480	150	304	9,118	18,090	1,200	16,890
Water year 1931	654	0	248	90,501	179,500	15,190	164,300
October 1931	370	133	203	6,297	12,490	1,300	11,190
November	197	37	108	3,230	6,410	1,170	5,240
December	126	0	60.5	1,875	3,720	890	2,830
Calendar year 1931	654	0	251	91,518	181,500	15,330	166,200
January 1932	117	47	87.5	2,712	5,380	1,210	4,170
February	194	0	102	2,948	5,850	1,280	4,570
March	396	180	279	8,662	17,180	1,470	15,710
April	535	270	398	11,938	23,680	2,250	21,430
May	534	113	251	7,783	15,440	3,320	12,120
June	400	166	278	8,354	16,570	3,570	13,000
July	464	204	369	11,431	22,670	2,780	19,890
August	488	226	358	11,109	22,030	1,490	20,540
September	400	180	291	8,730	17,320	1,460	15,860
Water year 1932	535	0	232	85,069	168,700	22,190	146,600
October 1932	270	35	128	3,964	7,860	1,190	6,670
November	160	20	90.6	2,719	5,390	1,160	4,230
December	106	14	50.3	1,559	3,090	930	2,160
Calendar year 1932	535	0	224	81,909	162,500	22,110	140,400
January 1933	70	0	32.4	1,004	1,990	730	1,260
February	270	15	95.8	2,683	5,320	930	4,390
March	410	150	283	8,762	17,380	1,230	16,150
April	425	110	285	8,537	16,930	1,190	15,740
May	404	205	284	8,812	17,480	1,880	15,600
June	398	140	297	8,905	17,660	3,540	14,120
July	515	300	420	13,032	25,850	1,970	23,880
August	525	245	383	11,862	23,530	1,230	22,300
September	535	230	336	10,068	19,970	1,220	18,750
Water year 1933	535	0	224	81,907	162,400	17,200	145,200
October 1933	409	0	163	5,055	10,030	1,210	8,820
November	101	12	78.4	2,352	4,670	1,070	3,600
December	93	20	60.8	1,884	3,740	990	2,750
Calendar year 1933	535	0	227	82,956	164,600	17,190	147,400
January 1934	197	25	94.6	2,933	5,820	1,110	4,710
February	281	83	157	4,397	8,720	1,110	7,610
March	502	106	319	9,886	19,610	1,230	18,380
April	533	199	356	10,665	21,150	1,190	19,960
May	448	169	308	9,553	18,950	1,700	17,250
June	496	245	351	10,530	20,890	1,360	19,530
July	567	419	496	15,389	30,520	1,230	29,290
August	561	229	425	13,168	26,120	1,320	24,800
September	467	144	289	8,681	17,220	1,190	16,030
Water year 1934	567	0	259	94,493	187,400	14,710	172,800
October 1934	402	72	213	6,616	13,120	1,230	11,890
November	180	25	111	3,333	6,610	1,150	5,460
December	166	30	92.9	2,881	5,710	1,090	4,620
Calendar year 1934	567	25	269	98,032	194,400	14,910	179,600
January 1935	170	20	62.8	1,946	3,860	970	2,890
February	266	0	132	3,700	7,340	970	6,370
March	365	171	274	8,485	16,830	1,230	15,600
April	388	235	327	9,816	19,470	2,470	17,000
May	334	208	289	8,956	17,760	2,650	15,120
June	574	245	432	12,949	25,680	2,570	23,110
July	640	297	497	15,407	30,560	2,440	28,120
August	530	310	423	13,105	25,990	2,270	23,710
September	520	230	376	11,285	22,380	2,080	20,300
Water year 1935	640	0	270	98,479	195,300	21,120	174,200

Monthly summary of diversions from Colorado River to Palo Verde Valley, near Blythe, Calif., 1922-23, 1925-38--Continued

Month	Diversions at intake					Estimated waste water	Net diversions
	Discharge in second-feet			Runoff			
	Maximum	Minimum	Mean	Second-foot days	Acre-feet	Acre-feet	Acre-feet
October 1935	350	100	212	6,580	13,050	2,150	10,900
November	130	40	89.3	2,680	5,320	1,240	4,080
December	165	50	98.4	3,049	6,050	1,570	4,480
Calendar year 1935	640	0	268	97,958	194,300	22,610	171,700
January 1936	280	0	115	3,550	7,040	1,100	5,940
February	300	0	184	5,340	10,590	1,260	9,330
March	510	210	416	12,900	25,590	1,230	24,360
April	500	350	464	13,930	27,630	1,180	26,450
May	480	190	354	10,980	21,780	1,210	20,570
June	600	250	424	12,720	25,230	1,190	24,040
July	670	350	562	17,430	34,570	1,240	33,330
August	560	340	483	14,980	29,710	2,460	27,250
September	540	200	388	11,630	23,070	2,380	20,690
Water year 1936	670	0	316	115,769	229,600	18,210	211,400
October 1936	430	40	184	5,700	11,310	1,990	9,320
November	110	40	69.7	2,090	4,150	1,190	2,960
December	170	40	77.7	2,410	4,780	1,230	3,550
Calendar year 1936	670	0	311	113,660	225,400	17,660	207,800
January 1937	120	30	56.5	1,750	3,470	910	2,560
February	290	80	169	4,730	9,380	1,050	8,330
March	460	30	284	8,790	17,430	1,260	‡16,170
April	470	250	360	10,800	21,420	1,190	20,230
May	420	240	349	10,830	21,480	1,230	20,250
June	590	270	402	12,070	23,940	1,160	22,780
July	760	300	531	16,450	32,630	1,230	31,400
August	700	350	569	17,650	35,010	1,230	33,780
September	620	190	419	12,570	24,930	1,190	23,740
Water year 1937	760	30	290	105,840	209,900	14,860	195,100
October 1937	320	130	212	6,570	13,030	1,230	11,800
November	250	110	157	4,700	9,320	1,190	8,130
December	190	100	137	4,250	8,430	1,230	7,200
Calendar year 1937	760	30	305	111,160	220,500	14,100	206,400
January 1938	200	40	139	4,310	8,550	1,230	7,320
February	290	110	193	5,400	10,710	1,110	9,600
March	550	80	278	8,630	17,120	1,240	15,880
April	470	250	387	11,620	23,050	1,190	21,860
May	570	260	375	11,630	23,070	1,230	21,840
June	590	310	442	13,260	26,300	1,190	25,110
July	590	300	475	14,720	29,200	1,230	27,970
August	580	250	441	13,680	27,130	1,230	25,900
September	450	310	393	11,800	23,400	1,190	22,210
Water year 1938	590	40	303	110,570	219,300	14,490	204,800

Yearly diversions from Colorado River to Palo Verde Valley, near Blythe, Calif., 1922-23, 1925-38

	Diversions at intake				Net diversions			
	Water year		Calendar year		Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1922			181	131,100	-	-	152	110,000
1923	253	183,200	249	180,500	221	159,800	218	158,000
1925			312	225,700	-	-	287	208,100
1926	279	202,100	293	212,000	253	183,500	266	192,400
1927	297	215,400	295	213,800	267	193,500	264	190,800
1928	224	162,600	234	169,600	196	142,200	206	149,400
1929	283	205,200	279	201,700	251	181,500	246	178,400
1930	250	180,700	248	179,600	222	160,600	221	159,700
1931	248	179,500	251	181,500	227	164,300	230	166,200
1932	232	168,700	224	162,500	202	146,600	193	140,400
1933	224	162,400	227	164,600	201	145,200	204	147,400
1934	259	187,400	269	194,400	239	172,800	248	179,600
1935	270	195,300	268	194,300	241	174,200	237	171,700
1936	316	229,600	311	225,400	291	211,400	286	207,800
1937	290	209,900	305	220,500	269	195,100	285	206,400
1938	303	219,300			283	204,800		

Note.- Net diversion is diversion at intake minus estimated waste water.

COLORADO RIVER NEAR PICACHO, CALIF.

Location.- Lat. 33°02'00", long. 114°33'00", in NW¼ sec. 22, T. 13 S., R. 23 E., San Bernardino base line, 4 miles downstream from Picacho, 14½ miles upstream from Imperial Dam, 133 miles downstream from Parker Dam, and 289 miles downstream from Boulder Dam.

Drainage area.- 184,100 square miles(1940 revision).

Records available.- July 1934 to September 1938. Also yearly estimates 1903-34.

Average discharge.- 4 years (water years, 1935-38), 7,070 second-feet.

Extremes.- 1934-38: Maximum discharge, 26,900 second-feet Feb. 10, 1937; minimum, 538 second-feet Aug. 3, 1934; minimum daily discharge since regulation began at Boulder Dam, 1,450 second-feet Feb. 17, 1935.

Gage.- Water-stage recorder on right bank since July 13, 1934. Zero of gage is 167.38 feet above mean sea level (general adjustment of 1929). Vertical staff gage in stilling well at same site and datum Apr. 15 to July 12, 1934, read to hundredths several times each day.

Remarks.- Records excellent. Discharge measurements, using equipment and methods particularly adapted to lower Colorado River, were made almost daily with additional measurements made on days of important change in flow. Since April 1938, some backwater effect from Imperial Dam has moderately slackened velocity at this station, has caused aggradation of the river bed, and caused a continuing rise in gage heights, but has resulted in no decrease in accuracy of discharge record because of the frequency of discharge measurements. Discharge completely regulated at Boulder Dam since Feb. 1, 1935, and partially regulated at Parker Dam since July 1, 1938. No regulation below Boulder Dam prior to closing of Parker Dam except that flood crests in February 1937 and March 1938 were materially reduced by temporary storage behind construction works at Parker Dam. Diversions for irrigation above and below station.

Records for this station show discharge of Colorado River above diversions in the vicinity of Yuma, and above Gila River. They have been extended back to 1903 on the basis of records of Colorado River at Yuma, Gila River near Dome, and Yuma main canal at Laguna Dam. For the period 1926-34, consideration has been given to diversions to North Gila Valley and channel losses between stations; for the period 1903-25 that refinement was not warranted. The accuracy of these computed estimates for 1903-34 is similar to that of the records at the individual stations on which they are based.

Monthly summary of discharge of Colorado River near Picacho, Calif., 1934-38

(† Partly estimated)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
July 1934	-	680	1,450	†44,944	89,150
August	3,330	568	1,148	35,578	70,570
September	6,970	998	2,433	72,998	144,800
October 1934	3,040	1,070	1,904	59,030	117,100
November	3,580	1,860	2,471	74,120	147,100
December	4,740	3,090	3,728	115,580	229,200
January 1935	7,350	3,750	4,973	154,170	305,800
February	14,500	1,450	4,601	128,830	255,500
March	8,510	4,890	6,779	210,140	416,800
April	6,850	5,810	6,371	191,130	379,100
May	13,200	5,350	7,159	221,940	440,200
June	17,000	12,800	14,660	439,700	872,100
July	13,400	7,820	10,050	311,580	618,000
August	8,970	7,820	8,265	256,200	508,200
September	8,530	7,820	8,310	249,310	494,500
Water year 1935	17,000	1,070	6,607	2,411,730	4,784,000
October 1935	8,650	7,930	8,317	257,830	511,400
November	8,850	8,410	8,637	259,100	513,900
December	8,650	4,120	4,636	143,720	285,100
Calendar year 1935	17,000	1,450	7,736	2,823,650	5,601,000
January 1936	4,490	3,970	4,248	131,700	261,200
February	6,090	3,990	4,826	139,940	277,600
March	8,690	5,100	7,510	232,800	461,800
April	8,850	8,050	8,344	250,320	496,600
May	9,710	6,300	7,766	240,750	477,500
June	9,300	5,730	7,893	236,800	469,700
July	10,300	8,530	9,050	280,560	556,500
August	10,100	7,190	8,215	254,670	505,100
September	7,930	6,740	7,473	224,190	444,700
Water year 1936	10,300	3,970	7,247	2,652,380	5,261,000

Monthly summary of discharge of Colorado River near Picacho, Calif., 1934-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	6,970	5,350	6,194	192,010	380,800
November	6,230	4,540	5,236	157,070	311,500
December	5,040	4,120	4,438	137,570	272,900
Calendar year 1936	10,300	3,970	6,772	2,478,380	4,916,000
January 1937	5,320	3,480	4,327	134,140	266,100
February	23,800	3,750	7,506	210,170	416,900
March	11,900	5,710	7,808	242,040	480,100
April	8,650	7,430	8,050	241,490	479,000
May	8,730	6,450	7,646	237,040	470,200
June	9,180	6,630	7,741	232,230	460,600
July	9,670	8,650	9,073	281,270	557,900
August	9,300	8,410	8,854	274,470	544,400
September	8,980	6,960	7,983	239,500	475,000
Water year 1937	23,800	3,480	7,066	2,579,000	5,115,000
October 1937	7,590	6,720	7,225	223,990	444,300
November	6,960	5,450	6,159	184,770	366,500
December	6,370	5,110	5,757	178,460	354,000
Calendar year 1937	23,800	3,480	7,341	2,679,570	5,315,000
January 1938	6,330	5,010	5,618	174,170	345,500
February	6,370	4,960	5,790	162,110	321,500
March	21,600	5,460	7,837	242,940	481,900
April	10,400	7,750	8,551	256,520	508,800
May	8,560	6,840	7,688	238,330	472,700
June	12,500	6,840	8,272	248,170	492,200
July	11,000	1,560	8,565	265,510	526,600
August	9,780	7,870	8,844	274,150	543,800
September	8,280	7,310	7,912	237,360	470,800
Water year 1938	21,600	1,560	7,360	2,686,480	5,329,000

Yearly discharge of Colorado River near Picacho, Calif., 1903-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1903	15,200	11,000,000	15,600	11,300,000
1904	13,300	9,660,000	13,600	9,870,000
1905	21,900	15,900,000	22,200	16,100,000
1906	23,600	17,100,000	24,400	17,700,000
1907	34,600	25,000,000	34,300	24,800,000
1908	17,600	12,800,000	17,300	12,600,000
1909	34,500	25,000,000	35,000	25,300,000
1910	20,300	14,700,000	19,500	14,100,000
1911	22,100	16,000,000	24,300	17,600,000
1912	26,600	19,300,000	25,100	18,200,000
1913	16,900	12,200,000	16,600	12,000,000
1914	27,900	20,200,000	28,500	20,600,000
1915	19,200	13,900,000	18,100	13,100,000
1916	24,100	17,500,000	26,000	18,900,000
1917	29,200	21,100,000	27,500	19,900,000
1918	18,200	13,200,000	18,300	13,200,000
1919	14,500	10,500,000	14,500	10,500,000
1920	28,900	21,000,000	29,100	21,100,000
1921	26,700	19,300,000	26,900	19,500,000
1922	24,100	17,400,000	23,300	16,900,000
1923	23,400	16,900,000	24,800	18,000,000
1924	17,400	12,600,000	16,000	11,600,000
1925	16,100	11,700,000	17,900	13,000,000
1926	19,000	13,800,000	17,400	12,600,000
1927	22,600	16,400,000	24,200	17,500,000
1928	20,600	15,000,000	19,300	14,000,000
1929	25,100	18,200,000	26,000	18,800,000
1930	17,700	12,800,000	16,600	12,000,000
1931	8,500	6,150,000	8,400	6,080,000
1932	21,200	15,400,000	21,100	15,300,000
1933	13,100	9,480,000	13,100	9,480,000
1934	5,900	4,270,000	5,100	3,690,000
1935	6,607	4,784,000	7,736	5,601,000
1936	7,247	5,261,000	6,772	4,916,000
1937	7,066	5,115,000	7,341	5,315,000
1938	7,360	5,329,000	-	-

Note.- Mean discharge 1903-34 computed from records of discharge of Colorado River at Yuma, less Gila River near Dome, plus Yuma main canal at Laguna Dam, and for 1926-34 plus about 100 second-feet to compensate for diversions to North Gila Valley and for channel losses between Picacho and Yuma. Runoff 1903-34 computed from mean discharge.

DIVERSIONS FROM COLORADO RIVER TO NORTH GILA VALLEY NEAR YUMA, ARIZ.

Location.- North Gila Valley canal diverts water from Colorado River at the Arizona end of Laguna Dam in sec. 14, T. 7 S., R. 22 W., 9 miles upstream from Gila River, and 10 miles northeast of Yuma, for irrigation in North Gila Valley, which is that portion of the valley lying north of Gila River and east of Colorado River.

Records available.- March 1935 to September 1938.

Cooperation.- Records of daily diversions taken from Bureau of Reclamation weekly reports of diversions from Colorado River below Boulder Dam.

Remarks.- Diversions began about 1912 but no records are now available for the period prior to 1935. The quantities of water diverted are believed to have been more or less the same each year.

Monthly summary of diversions from Colorado River to North Gila Valley near Yuma, Ariz., 1935-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
March 11-31, 1935	50	50	50	1,050	2,080
April	50	20	37.5	1,125	2,230
May	86	20	44.1	1,366	2,710
June	93	72	82.5	2,475	4,910
July	95	62	76.7	2,378	4,720
August	95	56	72.0	2,231	4,430
September	88	36	76.5	2,295	4,550
October 1935	75	16	44.2	1,371	2,720
November	70	10	26.7	802	1,590
December	29	0	18.3	566	1,120
January 1936	76	0	37.3	1,157	2,290
February	76	8	29.6	858	1,700
March	82	8	58.9	1,826	3,620
April	90	41	64.4	1,933	3,830
May	86	0	66.2	2,052	4,070
June	109	46	90.8	2,723	5,400
July	101	67	84.8	2,629	5,210
August	116	73	82.4	2,554	5,070
September	116	56	89.6	2,689	5,330
Water year 1936	116	0	57.8	21,160	41,950
October 1936	83	0	43.8	1,359	2,700
November	67	9	36.6	1,098	2,180
December	56	0	24.6	763	1,510
Calendar year 1936	116	0	59.1	21,641	42,910
January 1937	49	0	15.5	481	954
February	92	13	43.6	1,222	2,420
March	108	0	69.7	2,160	4,280
April	82	63	69.2	2,076	4,120
May	112	19	59.8	1,854	3,680
June	105	63	86.0	2,581	5,120
July	102	63	83.2	2,579	5,120
August	88	67	80.4	2,493	4,940
September	117	43	88.7	2,662	5,280
Water year 1937	117	0	58.4	21,328	42,300
October 1937	112	31	68.7	2,131	4,230
November	55	18	43.3	1,300	2,580
December	72	0	43.3	1,343	2,660
Calendar year 1937	117	0	62.7	22,882	45,380
January 1938	63	0	28.7	889	1,760
February	89	0	31.0	867	1,720
March	100	0	71.6	2,220	4,400
April	95	35	80.0	2,401	4,760
May	87	35	66.0	2,047	4,060
June	90	0	71.0	2,130	4,220
July	85	0	51.6	1,600	3,170
August	90	65	78.4	2,430	4,820
September	110	35	73.0	2,190	4,340
Water year 1938	112	0	59.0	21,548	42,720

Yearly diversions from Colorado River to North Gila Valley near Yuma, Ariz., 1936-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1936	57.8	41,950	59.1	42,910
1937	58.4	42,300	62.7	45,380
1938	59.0	42,720	-	-

YUMA MAIN CANAL AT LAGUNA DAM, NEAR YUMA, ARIZ.

Location.- In sec. 25, T. 15 S., R. 23 E., in California, a short distance downstream from canal headgates at Laguna Dam, 10 miles northeast of Yuma.

Records available.- March 1910 to September 1938.

Average discharge.- 10 years (water years, 1929-38), 1,786 second-feet.

Determination of discharge.- Records collected by Bureau of Reclamation since diversion of water for irrigation began at Laguna Dam on Mar. 14, 1910. Discharge determined by usual methods of stream gaging, employing staff gages in canal near the head and above all irrigation turnouts.

Cooperation.- Records of monthly runoff in acre-feet, 1910-14, daily runoff in acre-feet, 1915-30, and daily mean discharge in second-feet, 1931-38, furnished by Bureau of Reclamation. Other data here presented have been computed from records furnished.

Remarks.- Yuma main canal diverts water from Colorado River at California end of Laguna Dam in NE¼ sec. 25, T. 15 S., R. 23 E., 9 miles upstream from Gila River, and 10 miles northeast of Yuma; supplies irrigation water to the Yuma Project in California; develops power at siphon-drop power plant in SE¼SE¼ sec.10, T. 16 S., R. 22 E., 3½ miles north of Yuma; and delivers water to siphon under Colorado River for irrigation of Yuma project in Arizona. Water used for power but not for irrigation is returned to Colorado River through Yuma main canal wasteway which enters Colorado River on California side in SW¼ sec. 26, T. 16 S., R. 22 E., half a mile downstream from gaging station on Colorado River at Yuma.

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
March 14-31, 1910	-	-	2.8	50	100
April	-	-	3.4	100	200
May	-	-	4.9	150	300
June	-	-	6.7	200	400
July	-	-	6.5	200	400
August	-	-	6.5	200	400
September	-	-	8.4	250	500
October 1910	-	-	8.1	250	500
November	-	-	10.1	300	600
December	-	-	9.8	300	600
January 1911	-	-	9.8	300	600
February	-	-	21.8	600	1,200
March	-	-	32.5	1,010	2,000
April	-	-	40.3	1,210	2,400
May	-	-	48.8	1,510	3,000
June	-	-	50.4	1,510	3,000
July	-	-	40.7	1,260	2,500
August	-	-	54.2	1,680	3,330
September	-	-	52.9	1,590	3,150
Water year 1911	-	-	31.6	11,520	22,880
October 1911	-	-	28.0	867	1,720
November	-	-	22.0	660	1,310
December	-	-	17.6	545	1,080
Calendar year 1911	-	-	34.9	12,742	25,290
January 1912	-	-	16.8	519	1,030
February	-	-	24.0	696	1,380
March	-	-	21.3	660	1,310
April	-	-	36.6	1,100	2,180
May	-	-	64.6	2,000	3,970
June	-	-	71.8	2,150	4,270
July	-	-	181	5,600	11,100
August	-	-	211	6,550	13,000
September	-	-	210	6,300	12,500
Water year 1912	-	-	75.6	27,647	54,850

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1912	-	-	143	4,440	8,800
November	-	-	97.3	2,920	5,790
December	-	-	60.5	1,880	3,720
Calendar year 1912	-	-	95.1	34,815	69,050
January 1913	-	-	52.2	1,620	3,210
February	-	-	171	4,790	9,500
March	-	-	182	5,650	11,200
April	-	-	635	19,100	37,800
May	-	-	478	14,800	29,400
June	-	-	435	13,100	25,900
July	-	-	585	18,200	36,000
August	-	-	636	19,700	39,100
September	-	-	674	20,200	40,100
Water year 1913	-	-	346	126,400	250,500
October 1913	-	-	620	19,200	38,100
November	-	-	620	18,600	36,900
December	-	-	491	15,200	30,200
Calendar year 1913	-	-	466	170,160	337,400
January 1914	-	-	620	19,224	38,130
February	-	-	367	10,286	20,400
March	-	-	594	18,426	36,550
April	-	-	860	25,801	51,180
May	-	-	893	27,679	54,900
June	-	-	751	22,529	44,680
July	-	-	962	29,822	59,150
August	-	-	869	26,952	53,460
September	-	-	955	28,644	56,820
Water year 1914	-	-	719	262,363	520,500
October 1914	1,180	702	983	30,488	60,470
November	1,130	0	479	14,363	28,490
December	988	0	257	7,969	15,810
Calendar year 1914	-	-	718	262,183	520,000
January 1915	997	0	315	9,780	19,400
February	704	0	161	4,521	8,970
March	1,070	0	643	19,938	39,550
April	1,090	266	836	25,082	49,750
May	1,070	0	526	16,308	32,350
June	1,090	0	596	17,870	35,440
July	1,190	292	938	29,092	57,700
August	1,180	0	820	25,427	50,430
September	1,070	0	766	22,991	45,600
Water year 1915	1,190	0	613	223,829	444,000
October 1915	1,060	0	596	18,484	36,660
November	1,120	0	613	18,387	36,470
December	1,010	0	444	13,771	27,310
Calendar year 1915	1,190	0	607	221,651	439,600
January 1916	-	-	108	3,334	6,610
February	-	-	114	3,301	6,550
March	736	0	377	11,683	23,170
April	985	0	629	18,868	37,420
May	1,010	0	647	20,066	39,800
June	1,020	197	785	23,552	46,710
July	1,020	0	680	21,069	41,790
August	1,030	255	824	25,556	50,690
September	978	0	733	21,984	43,600
Water year 1916	1,120	0	547	200,055	396,800
October 1916	1,080	0	671	20,798	41,250
November	948	0	624	18,735	37,160
December	926	0	259	8,037	15,940
Calendar year 1916	1,080	0	538	196,983	390,700
January 1917	874	0	241	7,465	14,810
February	988	0	657	18,402	36,500
March	1,010	224	793	24,592	48,780
April	1,010	0	713	21,396	42,440
May	1,080	0	696	21,591	42,830
June	1,090	390	857	25,713	51,000
July	983	275	748	23,182	45,980
August	971	359	761	23,579	46,770
September	924	175	704	21,113	41,880
Water year 1917	1,090	0	643	234,602	465,300

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1917	961	0	618	19,170	38,020
November	718	0	405	12,142	24,080
December	730	0	315	9,774	19,390
Calendar year 1917	1,090	0	625	228,118	452,500
January 1918	728	0	223	6,921	13,730
February	791	0	321	8,987	17,830
March	969	0	681	21,126	41,900
April	988	148	808	24,230	48,060
May	1,070	389	846	26,239	52,040
June	1,120	336	872	26,156	51,880
July	1,150	418	996	30,872	61,230
August	1,150	459	969	30,049	59,600
September	1,160	239	873	26,204	51,970
Water year 1918	1,160	0	663	241,870	479,700
October 1918	1,130	0	650	20,149	39,960
November	809	0	267	8,005	15,880
December	759	0	217	6,716	13,320
Calendar year 1918	1,160	0	646	235,654	467,400
January 1919	759	0	361	11,183	22,180
February	789	0	505	14,135	28,040
March	1,080	0	639	19,798	39,270
April	1,170	0	909	27,268	54,090
May	1,180	0	780	24,186	47,970
June	1,270	0	982	29,453	58,420
July	1,200	0	896	27,771	55,080
August	1,150	0	763	23,654	46,920
September	1,070	0	768	23,054	45,730
Water year 1919	1,270	0	645	235,372	466,900
October 1919	1,040	0	676	20,947	41,550
November	815	0	342	10,263	20,360
December	725	0	301	9,342	18 530
Calendar year 1919	1,270	0	660	241,054	478,100
January 1920	719	0	274	8,485	16,830
February	476	0	33.8	980	1,940
March	1,050	0	791	24,508	48,610
April	1,050	0	766	22,972	45,560
May	1,050	0	756	23,427	46,470
June	1,040	653	897	26,902	53,360
July	1,190	529	1,033	32,037	63,540
August	1,180	444	1,030	31,926	63,320
September	1,090	0	607	18,219	36,140
Water year 1920	1,190	0	628	230,008	456,200
October 1920	1,040	271	686	21,259	42,170
November	899	0	452	13,567	26,910
December	783	0	391	12,106	24,010
Calendar year 1920	1,190	0	646	236,388	468,900
January 1921	824	0	406	12,576	24,940
February	868	0	585	16,383	32,500
March	998	73	792	24,543	48,680
April	1,170	0	863	25,891	51,350
May	1,080	0	757	23,469	46,550
June	1,030	169	787	23,598	46,810
July	1,130	449	862	26,715	52,990
August	1,060	0	734	22,759	45,140
September	1,070	0	768	23,054	45,730
Water year 1921	1,170	0	674	245,920	487,800
October 1921	862	0	382	11,840	23,480
November	878	0	683	20,486	40,630
December	854	0	378	11,713	23,230
Calendar year 1921	1,170	0	666	243,027	482,000
January 1922	587	0	190	5,903	11,710
February	843	0	665	18,829	36,950
March	1,040	424	856	26,533	52,630
April	1,060	0	783	23,480	46,570
May	1,040	474	869	26,945	53,440
June	1,130	474	902	27,057	53,670
July	1,180	494	929	28,814	57,150
August	1,100	494	943	29,231	57,980
September	1,050	0	543	16,294	32,320
Water year 1922	1,180	0	677	246,925	489,800

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1922	986	809	935	28,996	57,510
November	974	0	825	24,758	49,110
December	831	0	612	18,957	37,600
Calendar year 1922	1,180	0	755	275,597	546,600
January 1923	810	219	718	22,258	44,150
February	1,100	249	875	24,487	48,570
March	1,170	0	841	26,057	51,680
April	1,230	357	1,014	30,426	60,350
May	1,170	0	946	29,313	58,140
June	1,160	1,030	1,085	32,540	64,540
July	1,160	0	961	29,791	59,090
August	1,180	0	957	29,665	58,840
September	1,150	265	889	26,677	52,910
Water year 1923	1,230	0	887	323,925	642,500
October 1923	1,260	439	1,063	32,955	65,370
November	1,300	0	849	25,483	50,540
December	1,260	0	955	29,600	58,710
Calendar year 1923	1,300	0	929	339,252	672,900
January 1924	1,250	150	529	16,393	32,520
February	888	150	618	17,933	35,570
March	1,230	0	1,016	31,491	62,460
April	1,270	383	1,148	34,428	68,290
May	1,250	0	970	30,080	59,660
June	1,280	366	1,146	34,384	68,200
July	1,270	780	1,196	37,079	73,550
August	1,250	307	1,060	32,875	65,210
September	1,230	277	985	29,563	58,640
Water year 1924	1,300	0	962	352,264	698,700
October 1924	1,200	322	1,004	31,135	61,760
November	1,190	0	563	16,896	33,510
December	1,140	0	752	23,317	46,250
Calendar year 1924	1,280	0	917	335,574	665,600
January 1925	1,070	0	518	16,053	31,840
February	1,150	0	786	22,018	43,670
March	1,420	307	1,112	34,483	68,400
April	1,410	336	1,036	31,079	61,640
May	1,250	252	922	28,575	56,680
June	1,410	257	1,086	32,594	64,650
July	1,370	471	1,131	35,064	69,550
August	1,320	296	1,081	33,497	66,440
September	1,250	0	918	27,534	54,610
Water year 1925	1,420	0	910	332,245	659,000
October 1925	1,100	0	750	23,263	46,140
November	1,050	0	573	17,179	34,070
December	1,020	0	804	24,932	49,450
Calendar year 1925	1,420	0	894	326,271	647,100
January 1926	1,360	0	761	23,272	46,160
February	1,160	0	623	17,445	34,600
March	1,290	146	954	29,572	58,660
April	1,420	0	951	28,536	56,600
May	1,380	0	862	26,719	53,000
June	1,380	444	1,154	34,625	68,680
July	1,580	0	1,231	38,164	75,700
August	1,680	0	836	25,904	51,380
September	1,420	0	837	25,105	49,800
Water year 1926	1,680	0	862	314,716	624,200
October 1926	1,520	701	1,297	40,208	79,750
November	1,510	393	1,322	39,662	78,670
December	1,470	0	841	26,077	51,720
Calendar year 1926	1,680	0	973	355,289	704,700
January 1927	1,530	97	1,222	37,886	75,150
February	1,650	1,200	1,408	39,410	78,170
March	1,750	622	1,300	40,294	79,920
April	1,790	1,190	1,621	48,620	96,440
May	2,280	1,420	1,883	58,370	115,800
June	2,310	463	1,047	31,414	62,310
July	2,110	815	1,644	50,957	101,100
August	2,260	1,490	1,811	56,150	111,400
September	2,040	390	1,576	47,288	93,790
Water year 1927	2,310	0	1,415	516,336	1,024,000

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1927	759	410	605	18,764	37,220
November	718	376	487	14,617	28,990
December	1,660	375	1,126	34,893	69,210
Calendar year 1927	2,310	97	1,311	478,663	949,500
January 1928	1,750	1,210	1,551	48,080	95,370
February	1,750	801	1,536	44,548	88,360
March	2,000	793	1,370	42,459	84,220
April	1,960	1,270	1,730	51,900	102,900
May	1,950	854	1,574	48,787	96,770
June	2,010	1,220	1,762	52,870	104,900
July	2,200	1,500	1,813	56,190	111,500
August	2,050	1,260	1,725	53,460	106,000
September	1,950	1,270	1,574	47,230	93,680
Water year 1928	2,200	375	1,404	513,798	1,019,000
October 1928	1,950	1,160	1,592	49,340	97,860
November	1,860	686	1,668	50,037	99,250
December	1,850	1,360	1,644	50,950	101,100
Calendar year 1928	2,200	686	1,628	595,851	1,182,000
January 1929	1,770	894	1,444	44,762	88,780
February	1,840	1,270	1,500	41,990	83,290
March	1,960	1,290	1,724	53,430	106,000
April	2,010	1,510	1,788	53,650	106,400
May	2,030	1,320	1,790	55,500	110,100
June	2,040	1,560	1,831	54,940	109,000
July	2,040	1,570	1,845	57,210	113,500
August	2,020	1,490	1,799	55,780	110,600
September	2,010	0	1,525	45,748	90,740
Water year 1929	2,040	0	1,680	613,337	1,217,000
October 1929	1,990	1,500	1,742	54,000	107,100
November	1,910	1,420	1,718	51,530	102,200
December	1,930	1,320	1,733	53,730	106,600
Calendar year 1929	2,040	0	1,705	622,270	1,234,000
January 1930	1,740	1,110	1,521	47,150	93,520
February	1,870	1,400	1,645	46,070	91,380
March	2,030	1,470	1,815	56,260	111,600
April	2,090	1,570	1,846	55,370	109,800
May	2,150	1,560	1,873	58,060	115,200
June	2,150	1,610	1,932	57,950	114,900
July	2,160	1,610	1,918	59,460	117,900
August	2,140	1,610	1,905	59,060	117,100
September	2,110	1,510	1,851	55,520	110,100
Water year 1930	2,160	1,110	1,792	654,160	1,297,000
October 1930	2,100	1,540	1,859	57,640	114,300
November	2,100	1,600	1,862	55,860	110,800
December	2,260	1,590	1,851	57,390	113,800
Calendar year 1930	2,260	1,110	1,824	665,790	1,320,000
January 1931	1,910	1,310	1,659	51,440	102,000
February	1,970	1,520	1,782	49,890	98,960
March	2,020	1,550	1,867	57,880	114,800
April	2,070	1,560	1,851	55,530	110,100
May	2,050	1,400	1,821	56,450	112,000
June	2,090	1,560	1,874	56,220	111,500
July	2,090	1,430	1,824	56,530	112,100
August	2,080	1,360	1,728	53,560	106,200
September	1,940	1,240	1,614	48,430	96,060
Water year 1931	2,260	1,240	1,800	656,820	1,303,000
October 1931	2,070	1,600	1,847	57,260	113,600
November	2,060	1,600	1,850	55,500	110,100
December	1,950	1,440	1,723	53,410	105,900
Calendar year 1931	2,090	1,240	1,787	652,100	1,293,000
January 1932	1,980	1,560	1,824	56,550	112,200
February	2,060	1,560	1,815	52,640	104,400
March	2,070	1,590	1,868	57,900	114,800
April	2,100	1,590	1,858	55,750	110,600
May	2,070	1,580	1,850	57,340	113,700
June	2,090	1,590	1,876	56,270	111,600
July	2,110	1,460	1,859	57,640	114,300
August	2,110	1,570	1,846	57,230	113,500
September	2,080	1,490	1,817	54,510	108,100
Water year 1932	2,110	1,440	1,836	672,000	1,333,000

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1932	2,080	626	1,742	53,995	107,100
November	2,040	1,580	1,830	54,910	108,900
December	2,040	1,540	1,805	55,960	111,000
Calendar year 1932	2,110	626	1,852	670,695	1,330,000
January 1933	1,950	1,530	1,774	54,980	109,100
February	1,980	1,490	1,760	49,270	97,730
March	2,110	1,590	1,859	57,640	114,300
April	2,190	1,580	1,945	58,350	115,700
May	2,180	1,680	1,960	60,460	119,900
June	2,190	1,650	1,952	58,550	116,100
July	2,210	1,620	1,962	60,810	120,600
August	2,120	1,560	1,870	57,960	115,000
September	2,160	1,430	1,775	53,240	105,600
Water year 1933	2,210	626	1,852	676,185	1,341,000
October 1933	2,140	1,650	1,944	60,250	119,500
November	2,070	1,600	1,909	57,280	113,500
December	2,120	1,510	1,963	60,860	120,700
Calendar year 1933	2,210	1,430	1,889	689,650	1,368,000
January 1934	2,140	1,650	1,966	60,960	120,900
February	2,170	1,610	1,988	55,670	110,400
March	2,180	1,690	2,014	62,420	123,800
April	2,190	1,680	2,024	60,730	120,500
May	2,200	1,680	1,979	61,340	121,700
June	2,190	1,560	1,907	57,210	113,500
July	1,750	650	1,180	36,580	72,560
August	1,620	539	944	29,274	58,060
September	1,970	921	1,445	43,350	85,980
Water year 1934	2,200	539	1,770	645,924	1,281,000
October 1934	1,680	917	1,460	45,250	89,750
November	1,910	1,450	1,673	50,180	99,530
December	1,970	13	1,782	55,231	109,500
Calendar year 1934	2,200	13	1,694	618,195	1,226,000
January 1935	2,000	1,580	1,880	58,270	115,600
February	1,980	1,400	1,782	49,890	98,960
March	2,010	1,580	1,912	59,260	117,500
April	2,010	1,510	1,904	57,120	113,300
May	2,020	1,590	1,933	59,930	118,900
June	2,060	1,240	1,904	57,130	113,300
July	2,080	1,610	1,968	61,010	121,000
August	2,080	1,650	1,969	61,030	121,100
September	2,090	1,570	1,964	58,930	116,900
Water year 1935	2,090	13	1,844	673,231	1,335,000
October 1935	2,050	1,530	1,933	59,910	118,800
November	2,020	1,520	1,903	57,080	113,200
December	1,970	1,050	1,615	50,080	99,330
Calendar year 1935	2,090	1,050	1,889	689,640	1,368,000
January 1936	1,940	1,220	1,835	56,900	112,900
February	1,970	1,550	1,880	54,520	108,100
March	2,020	1,560	1,915	59,380	117,800
April	2,050	1,510	1,924	57,730	114,500
May	2,010	1,550	1,906	59,100	117,200
June	2,070	1,460	1,914	57,430	113,900
July	2,070	1,570	1,938	60,070	119,100
August	2,060	1,480	1,906	59,090	117,200
September	2,060	1,570	1,920	57,590	114,200
Water year 1936	2,070	1,050	1,882	688,380	1,366,000
October 1936	2,000	1,560	1,866	57,840	114,700
November	1,960	1,500	1,846	55,390	109,900
December	1,920	556	1,798	55,746	110,600
Calendar year 1936	2,070	556	1,887	690,786	1,370,000
January 1937	2,000	0	1,501	46,543	92,320
February	2,030	1,560	1,900	53,200	105,500
March	2,060	0	1,500	46,510	92,250
April	2,050	1,530	1,917	57,520	114,100
May	2,060	1,530	1,886	58,480	116,000
June	2,100	1,550	1,966	58,970	117,000
July	2,010	1,500	1,866	57,850	114,700
August	2,010	610	1,837	56,940	112,900
September	2,010	1,450	1,824	54,720	108,500
Water year 1937	2,100	0	1,807	659,709	1,308,000

Monthly summary of discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1937	1,980	1,450	1,793	55,590	110,300
November	1,950	1,430	1,788	53,630	106,400
December	1,930	1,440	1,785	55,330	109,700
Calendar year 1937	2,100	0	1,796	655,283	1,300,000
January 1938	1,950	1,460	1,787	55,400	109,900
February	1,990	0	1,534	42,940	85,170
March	630	0	583	18,060	35,820
April	1,380	660	1,068	32,040	63,550
May	1,980	0	1,405	43,570	86,420
June	1,990	1,440	1,638	55,140	109,400
July	1,980	1,450	1,836	56,890	112,900
August	2,010	1,470	1,896	58,790	116,600
September	2,000	1,450	1,881	56,430	111,900
Water year 1938	2,010	0	1,599	585,810	1,158,000

Yearly discharge of Yuma main canal at Laguna Dam, near Yuma, Ariz., 1910-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1910[a]	-	-	-	4,000
1911	31.6	22,880	34.9	25,290
1912	75.6	54,850	95.1	69,050
1913	346	250,500	466	337,400
1914	719	520,500	718	520,000
1915	613	444,000	607	439,600
1916	547	396,800	538	390,700
1917	643	465,300	625	452,500
1918	663	479,700	646	467,400
1919	645	466,900	660	478,100
1920	628	456,200	646	468,900
1921	674	487,800	666	482,000
1922	677	489,800	755	546,600
1923	887	642,500	929	672,900
1924	962	698,700	917	665,600
1925	910	659,000	894	647,100
1926	862	624,200	973	704,700
1927	1,415	1,024,000	1,311	949,500
1928	1,404	1,019,000	1,628	1,182,000
1929	1,680	1,217,000	1,705	1,234,000
1930	1,792	1,297,000	1,824	1,320,000
1931	1,800	1,303,000	1,787	1,293,000
1932	1,836	1,333,000	1,832	1,330,000
1933	1,852	1,341,000	1,889	1,368,000
1934	1,770	1,281,000	1,694	1,226,000
1935	1,844	1,335,000	1,889	1,368,000
1936	1,882	1,366,000	1,887	1,370,000
1937	1,807	1,308,000	1,795	1,300,000
1938	1,599	1,158,000	-	-

a March 14 to December 31.

GILA RIVER BELOW GILLESPIE DAM, ARIZ.[a]

Location.- Lat. 33°13'45", long. 112°45'30", in SE¼NE¼ sec. 2E, T. 2 S., R. 5 W., at east end of Gillespie Dam, 8 miles downstream from Hassayampa River, and about 165 miles upstream from mouth.

Drainage area.- 49,600 square miles (1940 revision).

Records available.- August 1921 to September 1938.

Average discharge.- 17 years (water years, 1922-38), 450 second-feet.

Extremes.- 1921-38: Maximum discharge observed, 70,000 second-feet Dec. 28, 1923, (height over crest of dam, 6.0 feet) from rating extended above 10,000 second-feet by weir formula adapted to this dam; no flow during parts of each year.

A probable flood peak discharge of 250,000 second-feet in February 1891 in this reach of Gila River was estimated in 1903.

Gage.- Water-stage recorder on training wall at left (east) end of dam, and 10 feet upstream from crest, since July 28, 1924. Zero of gage is 5.00 feet below average elevation of crest of dam which is 753.46 feet above mean sea level (general adjustment of 1929). Prior to July 23, 1932, zero of gage was at elevation of dam crest.

Aug. 4, 1921, to Nov. 10, 1924, depth of water on crest at left end of dam read once each day to nearest quarter inch.

Cooperation.- Records of depth of water on crest of dam 1921-24, and records of openings of sluice gates 1923-38, furnished by Gillespie Land and Irrigation Company (formerly Gila Water Company).

Remarks.- Records for 1921-24 fair; for 1925-38 good except those below about 100 second-feet, which are fair. No discharge measurements during 1921-22, only two prior to Nov. 10, 1924, but frequent measurements thereafter, including one or more each day during most floods. Crest of dam permanent but about 1,650 feet long and provides insensitive control for low discharge. Large deposits of silt behind dam cause varying conditions of flow during floods. Water passed through sluice gates computed from recorded gate openings and included in this record.

Both Gillespie and Enterprise canals divert water from Gila River at this dam, and their flow is not included in this record. Many other diversions for irrigation above station, but none below although much ground water is pumped in valleys downstream. Flow of Gila River and tributaries above station regulated by San Carlos Reservoir on Gila River (capacity, about 1,200,000 acre-feet revised) since 1928, by Lake Pleasant on Agua Fria River (capacity in 1938, 124,500 acre-feet revised) since 1927, and by a series of reservoirs on Salt River (capacity in 1938, 1,771,000 acre-feet revised) since 1911. Bartlett Dam on Verde River (reservoir capacity, 182,600 acre-feet revised), completed in 1939, was not effective in 1938.

Monthly summary of discharge of Gila River below Gillespie Dam, Ariz., 1921-38
(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
August 4-31, 1921	26,800	1,560	5,939	166,290	329,800
September	2,000	125	746	22,390	44,410
October 1921	5,150	215	732	22,695	45,010
November	620	315	468	14,035	27,840
December	13,900	405	1,560	48,350	95,900
January 1922	32,700	475	3,101	96,145	190,700
February	10,900	780	2,754	77,120	153,000
March	21,800	475	3,549	110,020	218,200
April	2,000	125	581	17,425	34,560
May	405	100	177	5,500	10,910
June	315	80	256	7,685	15,240
July	620	0	254	7,880	15,630
August	620	215	262	8,125	16,120
September	11,600	80	713	21,395	42,440
Water year 1922	32,700	0	1,196	436,375	865,600
October 1922	315	260	271	8,390	16,640
November	405	125	238	7,140	14,160
December	6,920	0	1,130	35,035	69,490
Calendar year 1922	32,700	0	1,101	401,860	797,100
January 1923	260	215	228	7,070	14,020
February	620	260	423	11,845	23,490
March	3,480	0	733	22,735	45,090
April	215	0	29.5	885	1,760
May	0	0	0	0	0
June	0	0	0	0	0
July	3,480	0	413	12,808	25,400
August	11,600	80	2,795	86,640	171,800
September	13,100	215	2,088	62,645	124,300
Water year 1923	13,100	0	699	255,193	506,200

a Previously published as at Gillespie Dam.

Monthly summary of discharge of Gila River below Gillespie Dam, Ariz., 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	215	0	12.4	385	764
November	13,100	260	2,103	63,095	125,100
December	70,000	1,040	5,853	181,440	359,900
Calendar year 1923	70,000	0	1,232	449,548	891,600
January 1924	23,600	645	3,329	103,185	204,700
February	575	50	373	10,820	21,460
March	440	50	115	3,575	7,090
April	2,750	50	1,018	30,535	60,570
May	50	0	32.3	1,000	1,980
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1924	70,000	0	1,077	394,035	781,600
October 1924	140	0	38.2	1,185	2,350
November	430	95	203	6,095	12,090
December	530	215	379	11,760	23,330
Calendar year 1924	23,600	0	459	168,155	333,600
January 1925	400	90	310	9,625	19,090
February	195	105	143	4,010	7,950
March	155	25	58.1	1,800	3,570
April	120	25	39.8	1,195	2,370
May	120	0	33.5	1,040	2,060
June	60	0	6.7	200	397
July	0	0	0	0	0
August	495	0	66.2	2,052	4,070
September	2,500	0	2,652	79,545	157,800
Water year 1925	12,500	0	325	118,507	235,100
October 1925	4,070	28	519	16,074	31,880
November	240	75	121	3,635	7,210
December	1,150	75	228	7,079	14,040
Calendar year 1925	12,500	0	346	126,255	250,400
January 1926	460	120	219	6,785	13,460
February	155	15	73.3	2,052	4,070
March	2,030	0	120	3,733	7,400
April	25,200	494	5,568	167,028	331,300
May	880	0	331	10,271	20,370
June	0	0	0	0	0
July	1,800	0	144	4,467	8,860
August	160	0	17.0	528	1,050
September	21,200	0	1,933	57,990	115,000
Water year 1926	25,200	0	766	279,642	554,600
October 1926	3,970	0	710	22,024	43,680
November	235	0	124	3,715	7,370
December	5,060	90	1,418	43,955	87,180
Calendar year 1926	25,200	0	884	322,548	639,700
January 1927	1,550	60	555	17,215	34,150
February	60,000	3	9,051	253,433	502,700
March	4,490	30	1,503	46,585	92,400
April	360	0	50.4	1,511	3,000
May	0	0	0	0	0
June	0	0	0	0	0
July	122	0	7.0	217	430
August	71	0	7.0	217	430
September	22,100	0	1,812	54,359	107,800
Water year 1927	60,000	0	1,214	443,231	879,100
October 1927	27	0	.9	27	54
November	0	0	0	0	0
December	190	0	78.1	2,422	4,800
Calendar year 1927	60,000	0	1,030	375,986	745,800
January 1928	269	0	81.8	2,535	5,030
February	7,270	10	884	25,635	50,850
March	170	0	27.5	854	1,690
April	62	0	2.1	62	123
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	1,420	0	265	8,221	16,310
September	141	0	4.7	141	280
Water year 1928	7,270	0	109	39,897	79,140

Monthly summary of discharge of Gila River below Gillespie Dam, Ariz., 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	0	0	0	0	0
November	0	0	0	0	0
December	190	0	32.3	1,001	1,990
Calendar year 1928	7,270	0	105	38,449	76,270
January 1929	170	0	103	3,199	6,350
February	150	0	22.2	622	1,230
March	630	0	44.4	1,375	2,730
April	15,900	0	993	29,793	59,090
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	1,120	0	219	6,776	13,440
September	2,630	0	446	13,390	26,560
Water year 1929	15,900	0	154	56,156	111,400
October 1929	254	0	9.6	299	593
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1929	15,900	0	152	55,454	110,000
January 1930	385	0	102	3,172	6,290
February	69	0	3.6	100	198
March	2,700	0	314	9,732	19,300
April	0	0	0	0	0
May	35	0	1.1	35	69
June	0	0	0	0	0
July	215	0	19.9	616	1,220
August	11,100	0	814	25,243	50,070
September	380	0	47.1	1,412	2,800
Water year 1930	11,100	0	111	40,609	80,540
October 1930	0	0	0	0	0
November	335	0	18.8	564	1,120
December	4	0	.1	4	8
Calendar year 1930	11,100	0	112	40,878	81,080
January 1931	4	0	.4	11	22
February	16,500	0	2,533	70,925	140,700
March	335	0	67.6	2,077	4,160
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	5,780	0	1,025	31,761	63,000
September	3,500	0	215	6,444	12,780
Water year 1931	16,500	0	306	111,806	221,800
October 1931	873	0	62.3	1,931	3,830
November	1,290	0	189	5,678	11,260
December	2,310	35	386	11,959	23,720
Calendar year 1931	16,500	0	358	130,806	259,500
January 1932	600	7	95.3	2,954	5,860
February	32,400	0	5,424	157,285	312,000
March	6,380	195	1,519	47,078	93,380
April	130	0	17.3	518	1,030
May	17	0	.5	17	34
June	0	0	0	0	0
July	0	0	0	0	0
August	395	0	17.1	531	1,050
September	0	0	0	0	0
Water year 1932	32,400	0	623	227,951	452,200
October 1932	726	0	30.4	942	1,870
November	0	0	0	0	0
December	270	0	78.2	2,425	4,810
Calendar year 1932	32,400	0	579	211,750	420,000
January 1933	820	0	123	3,824	7,580
February	379	5	84.4	2,364	4,690
March	15	0	1.4	43	85
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	121	0	7.7	232	460
Water year 1933	820	0	26.9	9,830	19,500

Monthly summary of discharge of Gila River below Gillespie Dam, Ariz., 1921-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	0	0	0	0	0
November	0	0	0	0	0
December	100	0	3.2	100	198
Calendar year 1933	820	0	18.0	6,563	13,010
January 1934	0	0	0	0	0
February	0	0	0	0	0
March	12	0	.5	17	34
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	1,810	0	110	3,413	6,770
September	207	0	17.7	531	1,050
Water year 1934	1,810	0	11.1	4,061	8,050
October 1934	0	0	0	0	0
November	0	0	0	0	0
December	270	0	35.7	1,108	2,200
Calendar year 1934	1,810	0	13.9	5,069	10,050
January 1935	980	12	224	6,950	13,790
February	6,280	0	980	27,431	54,410
March	3,340	50	606	18,777	37,240
April	834	0	61.9	1,857	3,680
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	1,200	0	123	3,823	7,580
September	1,400	0	162	4,874	9,670
Water year 1935	6,280	0	178	64,820	128,600
October 1935	5	0	.2	5	10
November	105	0	3.5	105	208
December	69	0	16.1	498	988
Calendar year 1935	6,280	0	176	64,320	127,600
January 1936	87	0	30.5	947	1,880
February	1,220	40	190	5,522	10,950
March	126	0	14.2	439	871
April	0	0	0	0	0
May	0	0	0	0	0
June	4	0	.1	4	8
July	2,390	0	164	5,071	10,060
August	210	0	37.5	1,164	2,310
September	260	0	8.7	260	516
Water year 1936	2,390	0	38.3	14,015	27,800
October 1936	0	0	0	0	0
November	53	0	2.5	75	149
December	571	0	36.0	1,115	2,210
Calendar year 1936	2,390	0	139.9	14,597	28,950
January 1937	696	31	200	6,193	12,280
February	24,500	20	4,300	120,388	238,800
March	17,600	46	2,182	67,635	134,200
April	667	2	108	3,247	6,440
May	2	0	.3	10	20
June	0	0	0	0	0
July	0	0	0	0	0
August	1,050	0	60.7	1,883	3,730
September	0	0	0	0	0
Water year 1937	24,500	0	549	200,546	397,800
October 1937	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1937	24,500	0	546	199,356	395,500
January 1938	120	0	7.3	227	450
February	0	0	0	0	0
March	35,800	0	3,049	94,512	187,500
April	20	0	2.1	62	123
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	121	0	4.5	139	276
September	0	0	0	0	0
Water year 1938	35,800	0	260	94,940	188,300

Yearly discharge of Gila River below Gillespie Dam, Ariz., 1922-38
(Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1922	1,196	865,600	1,101	797,100
1923	699	506,200	1,232	891,600
1924	1,077	781,600	459	333,600
1925	325	235,100	346	250,400
1926	766	554,600	884	639,700
1927	1,214	879,100	1,030	745,800
1928	109	79,140	105	76,270
1929	154	111,400	152	110,000
1930	111	80,540	112	81,080
1931	306	221,800	358	259,500
1932	623	452,200	579	420,000
1933	26.9	19,500	18.0	13,010
1934	11.1	8,050	13.9	10,050
1935	178	128,600	176	127,600
1936	38.3	27,800	39.9	28,950
1937	549	397,800	546	395,500
1938	260	188,300	-	-

GILA RIVER NEAR SENTINEL, ARIZ.

Location.- Lat. 33°00', long. 113°11', in sec. 10, T. 5 S., R. 9 W., near Sentinel dam site, about a mile downstream from remains of former concrete diversion dam, 10 miles northeast of Sentinel, and about 110 miles upstream from mouth.

Drainage area.- 51,600 square miles (1940 revision).

Records available.- June 1913 to December 1915; January 1916 to March 1917 (gage heights only).

Extremes.- 1913-17: Maximum stage, 24.75 feet Jan. 20 or 21, 1916, from floodmarks at site of gage destroyed by flood; discharge greater than 200,000 second-feet, from extension of rating curve and comparison with discharge at related stations. No flow during part of each year; gage height of zero flow, 4.8 feet on June 3, 1913.

A probable flood peak discharge of 250,000 second-feet in February 1891 in this reach of Gila River was estimated in 1903.

Gage.- Vertical staff on left bank, installed June 5, 1913, destroyed by flood Jan. 20, 1916, and replaced at same site and about same datum Mar. 5, 1916; read twice daily until Mar. 2, 1917. Occasional readings on temporary staff gages set by observer, Jan. 20 to Mar. 5, 1916.

Cooperation.- Gage readings and most of discharge measurements furnished by Southwestern Arizona Fruit and Irrigation Company.

Remarks.- Records of discharge below 20,000 second-feet fair, those of higher discharge poor. Estimates of flood discharge from extension of rating curve may be considered only as rough estimates but are reasonably well supported by records and estimates of discharge and general flood information in the basin above and below. Diversions for irrigation above station. Partial regulation by Roosevelt Dam on Salt River.

Monthly summary of discharge of Gila River near Sentinel, Ariz., 1913-15
(* Estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
June 1913	0	0	0	0	0
July	30	0	1	31	61
August	725	0	38	1,175	2,330
September	0	0	0	0	0
October 1913	0	0	0	0	0
November	775	0	79.2	2,375	4,710
December	825	145	276	8,570	17,000
January 1914	8,200	100	644	19,975	39,620
February	a25,000	80	a2,850	79,795	a158,300
March	2,040	65	371	11,510	22,830
April	255	2	47.3	1,420	2,820
May	2	0	.5	15	30
June	0	0	0	0	0
July	1,140	0	206	6,400	12,690
August	‡3,960	2	695	21,549	42,740
September	3,560	1	503	15,089	29,930
Water year 1914	a25,000	0	a457	166,698	a330,700
October 1914	4,860	0	740	22,951	45,520
November	3,320	145	915	27,462	54,470
December	*75,000	225	*12,000	372,000	737,900
Calendar year 1914	75,000	0	1,584	578,166	1,147,000
January 1915	*100,000	-	*6,000	186,000	368,900
February	-	-	*12,500	350,000	694,200
March	-	-	*8,000	248,000	491,900
April	16,500	3,400	6,940	208,200	413,000
May	-	-	*10,000	310,000	614,900
June	1,400	5	204	6,125	12,150
July	-	0	*1,000	31,000	61,490
August	-	2	*500	15,500	30,740
September	40	0	4	125	248
Water year 1915	*100,000	0	4,870	1,777,363	3,525,000
October 1915	0	0	0	0	0
November	0	0	0	0	0
December	860	0	51.5	1,595	3,160
Calendar year 1915	*100,000	0	3,717	1,356,545	2,691,000

a Revised; based on revised daily discharge as follows: Feb. 23, 25,000 sec.-ft., and Feb. 24, 12,700 sec.-ft.

Yearly discharge of Gila River near Sentinel, Ariz., 1914-15

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1914	a457	a330,700	1,584	1,147,000
1915	4,870	3,525,000	3,717	2,691,000

Revised.

GILA RIVER AT YUMA AND AT AND NEAR DOME,[a] ARIZ.

Location.- Lat. 32°45'30", long. 114°25'15", in SW¼ sec. 4, T. 8 S., R. 21 W., at highway bridge 3 miles west of Dome, and 12 miles upstream from mouth, since May 1929.
1902-3: Near mouth of Gila River at Yuma.
1903-6: At Dome (Gila City), 4 miles upstream from present site.

Drainage area.- 58,100 square miles near Dome.

Records available.- January to December 1903 at Yuma, October to December 1903 (gage heights only) and January 1904 to December 1906 at Dome (Gila City), and May 1929 to September 1938 near Doms. Also monthly estimates January 1907 to April 1929 for the same reach of river.
Miscellaneous discharge measurements made near mouth in 1902.

Average discharge.- 35 years (water years, 1904-38), 904 second-feet; last 10 years (water years, 1929-38), 82 second-feet.

Extremes.- Maximum daily discharge, 200,000 second-feet (roughly estimated) Jan. 22, 1916; no flow during parts of each year.

Gage.- Water-stage recorder on right bank about 300 feet upstream from highway bridge, since May 1929. Zero of gage is 148.18 feet above mean sea level (general adjustment of 1929).
No gage at Yuma.
Oct. 15, 1903, to Dec. 31, 1906, about 4 miles upstream at Dome (Gila City), vertical staff gage on left bank, supplemented by numerous other staff gages following radical changes in channel in 1905 and 1906. Zero of principal gage was 157.6 feet above mean sea level.

Cooperation.- Estimates of daily discharge 1907-28 furnished by Bureau of Reclamation.

Remarks.- Records for 1929-38 excellent. Records here presented for 1903-28 should be considered only as rough estimates. Except for gaging station at Dome 1903-6, there was no gage and no daily observation of flow until May 1929. Many observations and many estimates of discharge during periods of floods and subsequent flow were made by engineers of the Yuma Project, Bureau of Reclamation, at various points along the 20-mile reach of Gila River above its mouth. Many estimates of discharge of Gila River were also made by them from the difference between discharge of Colorado River at the Yuma gaging station and estimated discharge of Colorado River above Gila River. From such estimates and from many general and many detailed observations, estimates of daily discharge were compiled, from which a general knowledge of runoff of Gila River was obtained. From these data of daily discharge, there have been computed the monthly and annual data here presented for 1907-28. Many diversions for irrigation above station increasing in quantity throughout period of record. Regulation by storage reservoirs beginning with completion of Roosevelt Dam on Salt River in 1911. No diversions nor regulation betw en Gillespie Dam and this station.

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38
(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1903	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	2,000	10	508	15,240	30,230
May	-	0	12.9	400	793
June	0	0	0	0	0
July	0	0	0	0	0
August	-	0	‡147	4,550	‡9,020
September	1,400	0	123	3,677	7,290
October 1903	1,330	0	222	6,880	13,650
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1903	2,000	0	84.2	30,747	60,990
January 1904	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	1,650	0	94.2	2,920	5,790
August	4,560	a280	2,270	70,380	139,600
September	2,490	50	‡703	21,090	‡41,830
Water year 1904	4,560	0	277	101,270	200,900

a Revised.

a Known as Gila City in early years.

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1904	2,670	10	a474	14,700	a29,160
November	260	0	109	5,270	6,490
December	0	0	0	0	0
Calendar year 1904	4,560	0	a307	112,360	a222,900
January 1905	26,000	0	3,077	95,400	189,200
February	82,000	0	12,250	343,080	680,500
March	95,000	300	16,590	514,370	1,020,000
April	64,000	5,150	12,910	387,300	768,200
May	9,500	2,150	4,874	151,100	299,700
June	1,850	300	725	21,740	43,120
July	280	0	70.6	2,190	4,340
August	0	0	0	0	0
September	390	0	49.7	1,490	2,960
Water year 1905	95,000	0	a4,204	1,534,640	a3,044,000
October 1905	940	0	179	5,540	10,990
November	96,000	0	4,557	136,700	271,100
December	30,700	3,300	6,100	189,100	375,100
Calendar year 1905	95,000	0	‡5,063	1,848,010	3,665,000
January 1906	6,640	1,470	2,221	68,850	136,600
February	11,800	1,720	3,024	84,680	168,000
March	54,600	1,600	9,368	290,410	576,000
April	16,800	4,560	7,099	212,970	422,400
May	4,400	420	1,987	61,600	122,200
June	380	0	77.3	2,320	4,600
July	0	0	0	0	0
August	2,000	0	408	12,660	25,110
September	550	0	72.3	2,170	4,300
Water year 1906	95,000	0	‡2,923	1,067,000	‡2,116,000
October 1906	0	0	0	0	0
November	0	0	0	0	0
December	29,000	0	5,405	167,570	332,400
Calendar year 1906	54,600	0	2,475	903,230	1,792,000
January 1907	6,400	0	2,304	71,420	141,700
February	4,700	0	1,043	29,200	57,920
March	50,000	0	4,239	131,400	260,600
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	200	0	6.5	200	397
September	18,500	-	1,690	50,700	100,600
Water year 1907	50,000	0	1,234	450,490	893,600
October 1907	7,800	0	958	29,700	58,910
November	4,100	0	230	6,900	13,690
December	0	0	0	0	0
Calendar year 1907	50,000	0	875	319,520	633,800
January 1908	0	0	0	0	0
February	37,500	0	7,069	205,000	406,600
March	22,600	0	2,645	82,000	162,600
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	4,200	0	1,540	47,750	94,710
September	2,300	0	742	22,275	44,180
Water year 1908	37,500	0	1,075	393,625	780,700
October 1908	0	0	0	0	0
November	0	0	0	0	0
December	62,500	0	6,571	203,700	404,000
Calendar year 1908	62,500	0	1,532	560,725	1,112,000
January 1909	10,500	100	1,170	36,272	71,940
February	9,000	1,600	3,157	88,400	175,300
March	6,500	1,200	2,397	74,300	147,400
April	3,000	500	1,613	48,400	96,000
May	1,400	0	231	7,180	14,180
June	0	0	0	0	0
July	3,500	0	342	10,600	21,020
August	5,000	0	887	27,500	54,550
September	9,000	0	1,362	40,850	81,020
Water year 1909	82,500	0	1,472	537,172	1,065,000

a Revised.

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1909	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1909	10,500	0	914	333,472	661,400
January 1910	45,000	0	3,465	107,400	213,000
February	300	50	166	4,650	9,220
March	25	0	4.0	125	248
April	200	0	25.8	775	1,540
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1910	45,000	0	309	112,950	224,000
October 1910	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1910	45,000	0	309	112,950	224,000
January 1911	-	-	1,000	31,000	61,490
February	-	-	720	20,170	40,000
March	-	-	1,365	42,300	83,900
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	3,500	0	565	17,500	34,710
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1911	-	0	304	110,970	220,100
October 1911	3,000	0	489	15,150	30,050
November	2,000	0	290	8,700	17,260
December	0	0	0	0	0
Calendar year 1911	-	0	369	134,820	267,400
January 1912	0	0	0	0	0
February	0	0	0	0	0
March	10,000	0	,000	62,000	123,000
April	3,500	200	1,177	35,300	70,020
May	200	0	9.7	300	595
June	0	0	0	0	0
July	4,000	0	203	6,300	12,500
August	4,000	0	413	12,800	25,390
September	0	0	0	0	0
Water year 1912	10,000	0	384	140,550	278,800
October 1912	500	0	22.6	700	1,390
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1912	10,000	0	321	117,400	232,900
January 1913	0	0	0	0	0
February	300	0	10.7	300	595
March	2,500	400	935	29,000	57,520
April	1,200	0	263	7,900	15,670
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1913	2,500	0	104	37,900	75,180
October 1913	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1913	2,500	0	102	37,200	73,780
January 1914	60	0	19.4	600	1,190
February	8,000	0	2,140	59,920	118,800
March	1,000	0	287	8,900	17,650
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	500	0	32.3	1,000	1,980
August	800	200	474	14,700	29,160
September	600	0	185	5,550	11,010
Water year 1914	8,000	0	248	90,670	179,800

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1914	800	0	168	5,220	10,350
November	450	50	177	5,300	10,510
December	40,000	50	5,815	180,250	357,500
Calendar year 1914	40,000	0	771	281,440	558,200
January 1915	4,000	1,600	2,271	70,400	139,600
February	80,000	4,000	12,500	350,000	694,200
March	7,200	3,000	5,116	158,600	314,600
April	9,600	4,600	6,547	196,400	389,600
May	9,800	1,800	5,969	185,050	367,000
June	1,600	30	284	8,530	16,920
July	1,000	0	38.7	1,200	2,380
August	4,500	0	355	11,010	21,840
September	0	0	0	0	0
Water year 1915	80,000	0	3,211	1,171,960	2,324,000
October 1915	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1915	80,000	0	2,688	981,190	1,946,000
January 1916	199,000	0	34,040	1,055,200	2,093,000
February	85,000	5,000	14,980	434,400	861,600
March	18,000	10,000	12,150	376,500	746,800
April	11,000	8,500	9,400	282,000	559,300
May	850	250	438	13,585	26,950
June	200	0	42.5	1,275	2,530
July	0	0	0	0	0
August	0	0	0	0	0
September	18,000	0	1,192	35,750	70,910
Water year 1916	199,000	0	6,007	2,198,710	4,361,000
October 1916	28,000	100	3,616	112,100	222,300
November	1,500	500	903	27,100	53,750
December	600	400	447	13,850	27,470
Calendar year 1916	199,000	0	6,426	2,351,760	4,665,000
January 1917	13,300	600	2,665	82,600	163,800
February	4,000	1,000	1,500	42,000	83,310
March	6,000	350	2,161	67,000	132,900
April	40,000	200	7,533	226,000	448,300
May	13,000	200	3,963	122,850	243,700
June	100	0	7.8	235	466
July	0	0	0	0	0
August	5,000	0	1,339	41,500	82,310
September	0	0	0	0	0
Water year 1917	40,000	0	2,014	735,235	1,458,000
October 1917	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1917	40,000	0	1,595	582,185	1,155,000
January 1918	800	0	25.8	800	1,590
February	1,500	15	223	6,250	12,400
March	30,900	15	3,959	122,715	243,400
April	700	40	289	8,660	17,180
May	25	0	1.3	40	79
June	0	0	0	0	0
July	0	0	0	0	0
August	3,600	0	850	26,340	52,240
September	0	0	0	0	0
Water year 1918	30,900	0	452	164,805	326,900
October 1918	0	0	0	0	0
November	0	0	0	0	0
December	225	0	45.6	1,415	2,810
Calendar year 1918	30,900	0	455	166,220	329,700
January 1919	300	90	193	5,990	11,880
February	800	100	439	12,300	24,400
March	1,000	54	308	9,536	18,910
April	1,700	200	1,010	30,300	60,100
May	150	0	51.3	1,590	3,150
June	0	0	0	0	0
July	2,500	0	694	21,500	42,640
August	3,000	100	883	27,370	54,290
September	200	100	148	4,425	8,780
Water year 1919	3,000	0	313	114,426	227,000

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1919	1,000	100	344	10,670	21,160
November	72,600	150	3,160	94,800	188,000
December	37,100	400	4,987	154,600	306,600
Calendar year 1919	72,600	0	1,022	373,081	739,900
January 1920	1,000	300	652	20,200	40,070
February	95,000	500	7,379	214,000	424,500
March	7,500	1,500	3,098	96,050	190,500
April	3,800	600	1,818	54,550	108,200
May	600	0	239	7,400	14,680
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1920	95,000	0	1,782	652,270	1,294,000
October 1920	0	0	0	0	0
November	238	0	159	4,766	9,450
December	300	200	221	6,866	13,620
Calendar year 1920	95,000	0	1,103	403,832	801,000
January 1921	600	220	374	11,580	22,970
February	220	60	151	4,230	8,390
March	50	0	16.3	506	1,000
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	25,000	0	5,548	172,000	341,200
September	2,000	70	691	20,722	41,100
Water year 1921	25,000	0	605	220,670	437,700
October 1921	600	85	248	7,682	15,240
November	140	70	95.9	2,876	5,700
December	8,000	140	698	21,649	42,940
Calendar year 1921	25,000	0	661	241,245	478,500
January 1922	36,800	600	5,387	167,010	331,300
February	2,500	650	1,484	41,550	82,410
March	17,000	700	2,673	82,850	164,300
April	1,500	200	575	17,250	34,210
May	225	0	45.2	1,400	2,780
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	1,000	0	117	3,514	6,970
Water year 1922	36,800	0	947	345,781	685,800
October 1922	9	0	1.5	48	95
November	0	0	0	0	0
December	3,500	0	847	26,250	52,070
Calendar year 1922	36,800	0	931	339,872	674,100
January 1923	800	40	269	8,330	16,520
February	200	15	99.6	2,790	5,530
March	6,000	100	1,548	48,000	95,210
April	150	0	33.1	994	1,970
May	0	0	0	0	0
June	0	0	0	0	0
July	300	0	16.1	500	992
August	6,800	0	1,664	51,597	102,300
September	8,000	120	964	28,920	57,360
Water year 1923	8,000	0	459	167,429	332,000
October 1923	300	0	43.3	1,342	2,660
November	6,000	0	1,399	41,965	83,240
December	46,500	340	3,641	112,885	223,900
Calendar year 1923	46,500	0	815	297,323	589,700
January 1924	25,000	1,000	5,158	159,900	317,200
February	900	232	388	11,262	22,340
March	216	18	75.9	2,354	4,670
April	1,500	17	512	15,366	30,480
May	155	0	32.1	994	1,970
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1924	46,500	0	946	346,068	686,500

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1924	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1924	25,000	0	519	189,876	376,700
January 1925	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	50	0	3.0	90	179
July	0	0	0	0	0
August	0	0	0	0	0
September	6,500	0	1,088	32,640	64,740
Water year 1925	6,500	0	90	32,730	64,920
October 1925	556	0	174	5,398	10,710
November	71	0	7.1	212	420
December	175	0	29.6	917	1,820
Calendar year 1925	6,500	0	108	39,257	77,870
January 1926	88	0	15.1	469	930
February	20	0	3.7	104	206
March	0	0	0	0	0
April	20,000	0	3,836	115,080	228,300
May	1,085	20	344	10,673	21,170
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	3,000	0	110	3,300	6,550
Water year 1926	20,000	0	373	136,153	270,100
October 1926	18,000	10	1,379	42,750	84,790
November	0	0	0	0	0
December	1,700	0	734	22,760	45,140
Calendar year 1926	20,000	0	535	195,136	387,100
January 1927	2,000	140	595	18,450	36,600
February	61,000	50	7,481	209,480	415,500
March	3,900	300	1,897	58,800	116,600
April	285	60	143	4,285	8,500
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	800	0	33.1	1,025	2,030
September	6,000	390	921	27,640	54,820
Water year 1927	61,000	0	1,055	385,190	764,000
October 1927	250	0	22.6	700	1,390
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1927	61,000	0	878	320,380	635,400
January 1928	0	0	0	0	0
February	1,400	0	393	11,410	22,630
March	80	0	4.5	140	278
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1928	1,400	0	33.5	12,250	24,300
October 1928	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1928	1,400	0	31.6	11,550	22,910
January 1929	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	2	0	.1	2	4
September	530	0	50.1	1,502	2,980
Water year 1929	530	0	4.1	1,504	2,980

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1929	290	0	30.8	955	1,890
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1929	530	0	6.7	2,459	4,870
January 1930	0	0	0	0	0
February	0	0	0	0	0
March	341	0	30.4	942	1,870
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	2,340	0	191	5,929	11,760
September	0	0	0	0	0
Water year 1930	2,340	0	21.4	7,826	15,520
October 1930	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1930	2,340	0	18.8	6,871	13,630
January 1931	0	0	0	0	0
February	10,200	0	1,405	39,342	78,030
March	267	0	34.3	1,063	2,110
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	2,640	0	236	7,321	14,520
September	1,240	0	136	4,079	8,090
Water year 1931	10,200	0	142	51,805	102,800
October 1931	1	0	.1	2	4
November	298	0	23.1	693	1,370
December	747	0	107	3,322	6,590
Calendar year 1931	10,200	0	153	55,822	110,700
January 1932	160	0	22.7	704	1,400
February	16,800	0	2,929	84,940	168,500
March	4,430	339	1,337	41,435	82,190
April	402	8	101	3,021	5,990
May	7	2	3.3	103	204
June	1	0	.6	17	34
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1932	16,800	0	367	134,237	266,300
October 1932	338	0	18.8	582	1,150
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1932	16,800	0	357	130,802	259,500
January 1933	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1933	338	0	1.6	582	1,150
October 1933	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1933	0	0	0	0	0
January 1934	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	82	0	2.7	84	167
September	0	0	0	0	0
Water year 1934	82	0	.2	84	167

Monthly summary of discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1934	0	0	0	0	0
November	1	0	.03	1	2
December	0	0	0	0	0
Calendar year 1934	82	0	.23	85	169
January 1935	0	0	0	0	0
February	651	0	60.2	1,687	3,350
March	370	0	29.2	905	1,800
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	180	0	12.7	382	758
Water year 1935	651	0	8.2	2,975	5,910
October 1935	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1935	651	0	8.1	2,974	5,910
January 1936	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1936	0	0	0	0	0
October 1936	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1936	0	0	0	0	0
January 1937	0	0	0	0	0
February	5,410	0	1,281	35,881	71,170
March	8,110	0	1,233	38,215	75,800
April	562	0	113	3,396	6,740
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1937	8,110	0	212	77,492	153,700
October 1937	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1937	8,110	0	212	77,492	153,700
January 1938	0	0	0	0	0
February	0	0	0	0	0
March	7,920	0	746	23,140	45,900
April	0	0	0	0	0
May	0	0	0	0	0
June	0	0	0	0	0
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1938	7,920	0	63.4	23,140	45,900

Yearly discharge of Gila River at Yuma and at and near Dome, Ariz., 1903-38
(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1903	-	-	84.2	60,990
1904	277	200,900	a307	a222,900
1905	a4,204	a3,044,000	‡5,063	3,665,000
1906	‡2,923	‡2,116,000	2,476	1,792,000
1907	1,234	893,600	875	633,800
1908	1,075	780,700	1,532	1,112,000
1909	1,472	1,065,000	914	661,400
1910	309	224,000	309	224,000
1911	304	220,100	369	267,400
1912	384	278,800	321	232,900
1913	104	75,180	102	73,780
1914	248	179,800	771	558,200
1915	3,211	2,324,000	2,688	1,946,000
1916	6,007	4,361,000	6,425	4,665,000
1917	2,014	1,458,000	1,595	1,155,000
1918	452	326,900	455	329,700
1919	313	227,000	1,022	739,900
1920	1,782	1,294,000	1,105	801,000
1921	606	437,700	661	478,500
1922	947	685,800	931	674,100
1923	459	332,000	815	589,700
1924	946	686,500	519	376,700
1925	90	64,920	108	77,870
1926	373	270,100	535	387,100
1927	1,055	764,000	878	635,400
1928	33.5	24,300	31.6	22,910
1929	4.1	2,980	6.7	4,870
1930	21.4	15,520	18.8	13,630
1931	142	102,800	153	110,700
1932	367	266,300	357	259,500
1933	1.5	1,150	0	0
1934	.2	167	.23	169
1935	8.2	5,910	8.1	5,910
1936	0	0	0	0
1937	212	153,700	212	153,700
1938	63.4	45,900	-	-

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COLORADO RIVER AT YUMA, ARIZ.

Location.- Lat. 32°43'45", long. 114°37'15", in NW¼NE¼ sec. 35, T. 16 S., R. 22 E., San Bernardino base and meridian, 1,800 feet downstream from highway bridge at Yuma, 5 miles downstream from Gila River, 7 miles upstream from international boundary between California and Mexico, 14 miles downstream from Laguna Dam, and 19 miles downstream from Imperial Dam.

Drainage area.- 242,900 square miles (1940 [illegible]).

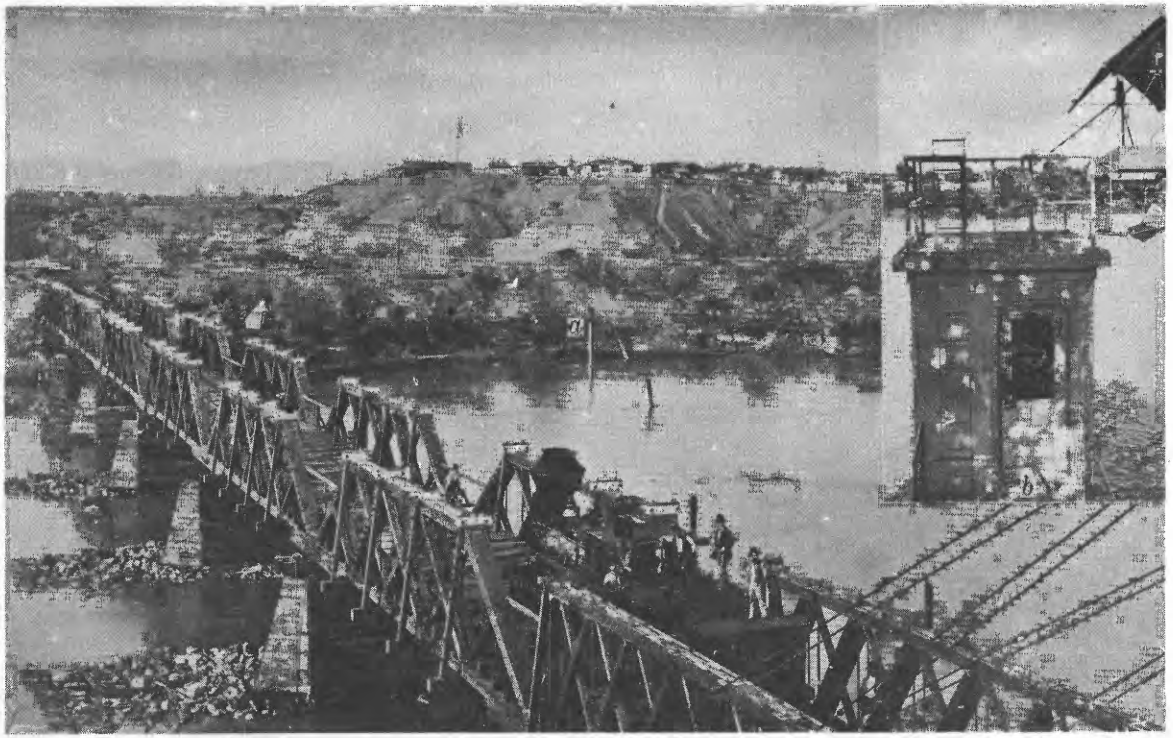
Records available.- January 1878 to December 1901 (gage heights), and January 1902 to September 1938.
Miscellaneous discharge measurement made in 1876.

Average discharge.- 32 years (water years, 1903-34), 21,170 second-feet. Average discharge past Yuma, including wasteway; 32 years (water years, 1903-34), 21,580 second-feet.

Extremes.- 1902-38: Maximum discharge, 250,000 second-feet Jan. 22, 1916 (gage height, 34.0 feet) estimated from peak gage height Jan. 22 and discharge measurement on Jan. 31; minimum daily discharge, 18 second-feet Aug. 25-27, 1934, due to diversion of river flow at Laguna Dam; minimum daily discharge past Yuma, 215 second-feet Aug. 26, 1934 (including 197 second-feet returned to river by Yuma main canal wasteway).
1878-1938: Maximum gage height observed, 34.0 feet Jan. 22, 1916; minimum, 12.70 feet Sept. 17, 1917. A flood-crest gage height of 33.2 feet occurred on Feb. 26, 1891.

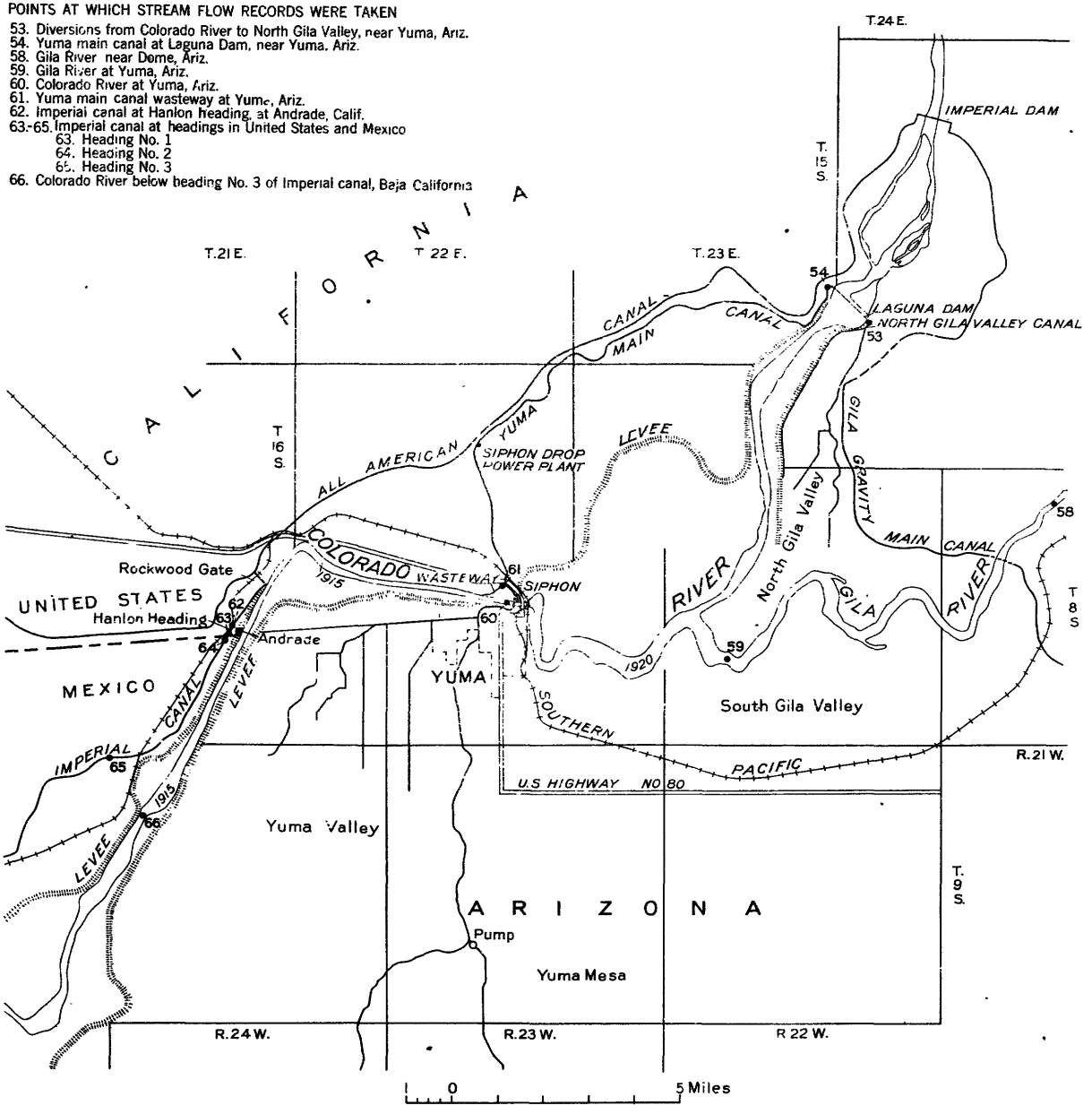
Gage.- Water-stage recorder on left bank (pl. 9), 700 feet downstream from site of original Southern Pacific railroad bridge, and about 1,800 feet downstream from present railroad and highway bridges; since July 20, 1934. Zero of gage is 102.79 feet above mean sea level.
1876-1922: Staff gages at several locations at or near original Southern Pacific railroad bridge. Original gage, established by Southern Pacific Co. in summer of 1876 on a pile near the right bank 100 feet upstream from the bridge, was graduated in feet and inches from 15 to 40 feet (pl. 9). Zero of gage was 100 feet above mean sea level, Southern Pacific datum, and at practically the same elevation as zero of present gage. This gage appears to have been covered by silt up to 22 feet in January 1895 and to 24 feet in 1905. It no longer existed in 1922. Supplementary low-water gages must have been used in conjunction with the original gage, but records of them are incomplete. It is known that a gage, reading from 10 to 22 feet and nailed to the downstream end of the first bridge pier from the left bank, was in use on Jan. 17, 1895. The gage in use in 1905, reading from 15 to 25 feet and nailed to pile protection on the left bank 50 feet downstream from the bridge, was very likely established in 1895 or 1899 at the time of replacing the pier to which was attached the gage previously described. The gage in use in 1922 was located on the left bank 100 feet upstream from the railroad bridge and had been in use for many years, possibly since 1907.
1922-34: An automatic sending device at a stilling well on the left bank 100 feet upstream from site of original railroad bridge actuated a water-stage recorder in the office of the Bureau of Reclamation, May 1, 1922, to Oct. 31, 1928. Water-stage recorder at same stilling well used Nov. 1, 1928, to Oct. 24, 1933. Supplementary staff gage on left bank 120 feet downstream used Oct. 25 to Nov. 10, 1933, and staff gage 800 feet downstream at same site as present gage, used Nov. 11, 1933, to July 19, 1934; both staff gages read to hundredths two or more times a day.
The datum of the various gages appears to have been the same from 1876 to 1938, or 35.31 feet below Geological Survey primary level bench mark 137SB. The elevation of this bench mark was originally given as 137.4 feet and then changed to 138.100 feet above mean sea level by the adjustment of 1908. The location of the gages relative to the railroad bridge doubtless caused greater relative differences in gage height than were caused by variations in effective gage datum. The drop in elevation of the water surface past the bridge was considerable at high-water and appreciable at low-water. The original wooden bridge had six wooden piers protected by large mats of timber and rock in the river until 1899. The steel bridge at the same site had three concrete piers in the river until removed down to low-water surface in 1927. While various gages downstream from the bridge were used for low and medium stages, it appears from the record that high stages were recorded on gages about 100 feet upstream from the bridge, on the original gage near the right bank until 1907 or later, and on the gage at the left bank thereafter until 1934.

Discharge measurements.- Little is known of methods or equipment used for making measurements prior to 1903 except that they were generally made from the railroad bridge where the disturbing influence of the piers was considerable. Only six measurements were made prior to 1902, and few in that year. Since 1903, measurements have been made from a cableway, generally three times a week, with additional ones at appropriate times, resulting in a total of about 6,790 current-meter measurements at this station; the average for the period 1928-38 being 262 measurements per year.
Prior to 1926, measurements are generally subject to errors of varying amounts due to methods and equipment used, including the use of relatively few measuring points. During the period 1911-15 and at stages above low-water during 1916-22, most measurements were based on observations of surface velocity using a coefficient of 0.9 to obtain the mean. At stages above low-water, soundings were made separately from velocity observations prior to 1926, and prior to 1923 a cylindrical weight suspended from one end (axis vertical) was used which was apt to be carried downstream by drift and high velocity, resulting in too large soundings. Soundings and velocity observations were further complicated by the use of a stayline 1918-25.
Beginning Jan. 21, 1926, improved equipment and methods specially adapted to the measurement of lower Colorado River have yielded measurements of relatively high accuracy.
In the computation of discharge measurements made prior to 1926, depths and velocities were used as observed without correction or adjustment for errors from causes cited above. Discharge of North Channel, which carried considerable water during flood seasons prior to construction of levees in 1908, and also Jan. 22 to Feb. 2, 1916, and during June 1920 when levees were breached, was separately measured from the railroad trestle and the flow included in the daily discharge.



OLD SOUTHERN PACIFIC RAILROAD BRIDGE AND GAGES ON COLORADO RIVER AT YUMA, ARIZ.

a, Original staff gage, 100 feet upstream from old bridge. Photograph taken prior to 1895, reproduced by courtesy of Bureau of Reclamation.
b, Present recording gage, 700 feet downstream from site of old bridge and about 1,800 feet downstream from present railroad and highway bridges.
Photograph by R. E. Marsh.



SKETCH MAP OF YUMA, ARIZONA, AND VICINITY

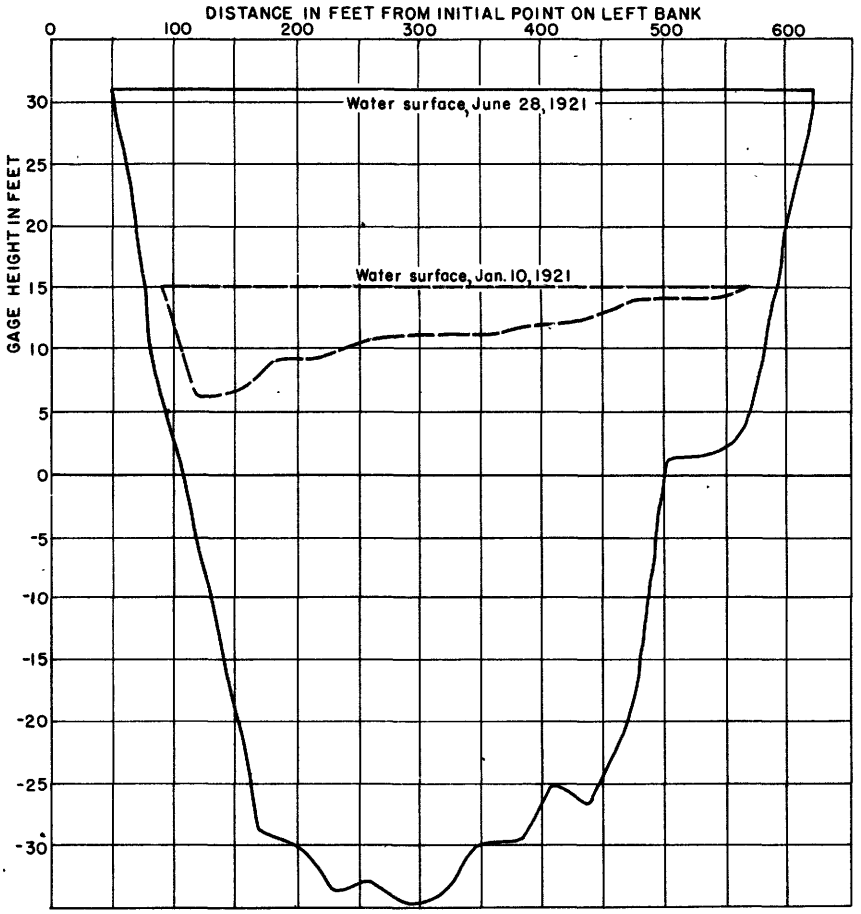


Figure 2.- Typical cross sections of Colorado River at Yuma, Ariz.

Cooperation.- Gages maintained and gage-height record furnished by Southern Pacific Company, 1878-1902; original record book now on file in office of Bureau of Reclamation at Yuma. Field data collected and records of daily discharge furnished by Bureau of Reclamation, January 1907 to July 20, 1922; monthly and yearly discharge computed therefrom.

Remarks.- Gage-height records are considered reliable, despite lack of positive information of permanence of gage datum prior to 1922, and particularly prior to 1903. Discharge records for 1902 are poor, 1903-22 fair, 1923-25 good, and 1926-38 excellent. Prior to 1926, and particularly prior to 1923, records show too great discharge above about 15,000 second-feet because of uncorrected observations used in discharge measurements. It has been estimated that as a whole the records of discharge prior to 1926 are from 5 to 10 percent too large.

Although available gage-height records are continuous from January 1878, only general conclusions have been found possible as to discharge or runoff prior to beginning of frequent discharge measurements late in 1902. Instability of river channel resulting in great and erratic variation in its carrying capacity has prevented any specific determination of discharge from recorded gage heights except for periods when discharge measurements were made. No closely defined relation between gage height and discharge has continued for more than a few days at a time, and general seasonal relations have been affected by great variation of magnitude and duration of discharge. (See figure 2 which shows tyrical cross sections of river at high and low stages.) Comparison of gage height-discharge relations during the period 1878-1902 with relations during 1903-38 has been further affected by new factors during the later period, such as construction of levees, annual construction and destruction of temporary partial diversion dam at Imperial canal heading, the break of Colorado River into Salton Sea Basin, great changes in the Colorado River Delta, and influences upstream affecting the silt load carried by the river. In general, studies based on gage-height records have indicated that runoff during the 25-year period 1878-1902 was less than during the succeeding 25 years.

Diversions for irrigation in the Colorado River Basin above this station, begun prior to 1876, have continually increased. Imperial canal, 6 miles downstream, is the only diversion in the United States below the station. Colorado River has been completely regulated at Boulder Dam since Feb. 1, 1935, and partially regulated at Parker Dam since July 1, 1938, with minor regulation at Laguna Dam since March 1910, and at Imperial Dam since April 1938. Frequent sluicing at Laguna Dam during low-water season each year has produced sharp variations in discharge for a few hours each time, and generally caused changes in stage-discharge relation. Gila River has been increasingly regulated by major storage reservoirs, on Salt River since 1911, on Agua Fria River since 1927, and on upper Gila River since 1928. Yuma main canal wasteway returns to the river half a mile downstream, that part of the water diverted at Laguna Dam which is used for power but not for irrigation and thus is by-passed around this station.

Records from this station, combined with records of discharge of Yuma main canal wasteway, show discharge of Colorado River past Yuma. In the accompanying table of combined discharge, minor diversions prior to 1912 for irrigation in Yuma Valley, and return waters from irrigation on the Yuma Project since then, have been neglected. Accuracy of combined records is dependent on accuracy of individual records of river and wasteway and on the relative quantities of each. The relation between the river gaging station and the various canals is shown in plate 10.

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38
(‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1902	4,520	3,230	3,727	115,540	229,200
February	4,720	3,300	3,955	110,740	219,600
March	5,340	4,340	4,903	151,990	301,500
April	11,400	4,340	6,179	185,370	367,700
May	59,200	11,400	35,960	1,114,790	2,211,000
June	56,200	29,000	42,520	1,275,600	2,530,000
July	27,000	5,130	12,530	388,340	770,300
August	5,560	3,230	4,183	129,670	257,200
September	8,360	3,050	3,819	114,570	227,200
October 1902	6,600	3,140	4,299	133,270	264,300
November	5,540	3,140	4,187	125,610	249,100
December	12,600	3,590	5,412	167,770	332,800
Calendar year 1902	59,200	3,050	11,000	4,013,260	7,960,000
January 1903	3,900	2,690	3,089	95,760	189,900
February	4,100	2,800	3,372	94,420	187,300
March	9,520	3,380	6,117	189,630	376,100
April	31,600	9,200	14,330	429,780	852,500
May	56,400	13,000	33,740	1,045,780	2,074,000
June	72,200	28,300	53,150	1,594,440	3,163,000
July	69,500	20,350	37,480	1,161,850	2,304,000
August	19,900	6,200	10,870	336,940	668,300
September	9,200	5,000	6,786	203,580	403,800
Water year 1903	72,200	2,690	‡15,280	5,578,830	11,070,000

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1903	15,800	6,130	8,482	262,940	521,500
November	6,390	4,680	6 399	161,970	321,300
December	5,340	3,170	4, 43	134,630	267,000
Calendar year 1903	72,200	2,690	‡15,650	5,711,720	11,330,000
January 1904	4,010	3,350	3,635	112,680	223,500
February	4,310	3,340	3,797	110,110	218,400
March	9,320	4,450	5,978	185,320	367,600
April	19,400	5,600	8,058	241,740	479,500
May	45,900	17,000	27,700	858,610	1,703,000
June	51,200	32,800	43,810	1,314,420	2,607,000
July	38,900	14,600	23,050	714,460	1,417,000
August	24,000	13,000	17,140	531,460	1,054,000
September	18,500	5,540	11,620	348,630	691,500
Water year 1904	51,200	3,170	13,600	4,976,970	9,871,000
October 1904	23,200	5,660	11,640	360,900	715,800
November	7,960	4,750	6,151	184,530	366,000
December	5,080	3,480	4,477	138,790	275,300
Calendar year 1904	51,200	3,340	‡13,940	5,101,650	10,120,000
January 1905	27,500	3,750	8,130	252,040	499,900
February	82,800	5,800	28,100	786,680	1,560,000
March	111,000	23,500	50,550	1,567,200	3,108,000
April	97,500	19,400	37,820	1,134,700	2,251,000
May	59,000	33,900	42,170	1,307,200	2,593,000
June	94,300	61,500	76,470	2,294,200	4,550,000
July	57,800	16,800	30,310	939,600	1,864,000
August	17,400	6,650	12,110	375,270	744,300
September	9,670	5,060	6,494	194,830	386,400
Water year 1905	111,000	3,480	‡26,130	9,535,940	18,910,000
October 1905	15,500	5,220	8,043	249,330	494,500
November	103,000	5,620	12,010	360,270	714,600
December	77,400	5,900	15,400	477,380	946,900
Calendar year 1905	111,000	3,750	‡27,230	9,938,700	19,710,000
January 1906	16,100	4,260	6,868	212,910	422,300
February	14,800	6,360	9,559	267,650	530,900
March	75,000	6,740	25,400	787,450	1,562,000
April	44,100	25,500	32,510	975,400	1,935,000
May	79,800	35,100	54,090	1,676,800	3,326,000
June	99,200	65,000	84,190	2,525,700	5,010,000
July	74,200	27,000	38,960	1,207,700	2,395,000
August	25,600	13,400	19,160	593,900	1,178,000
September	14,500	9,600	11,740	352,200	698,600
Water year 1906	103,000	4,260	26,540	9,686,690	19,210,000
October 1906	15,900	8,600	11,710	363,000	720,000
November	12,500	8,430	9,706	291,170	577,500
December	60,000	6,800	18,320	567,980	1,127,000
Calendar year 1906	99,200	4,260	26,910	9,821,860	19,480,000
January 1907	44,300	12,700	21,540	667,700	1,324,000
February	31,300	12,400	18,780	525,700	1,043,000
March	68,700	14,800	24,080	746,400	1,480,000
April	50,500	24,700	35,260	1,057,700	2,098,000
May	68,800	28,600	37,930	1,175,800	2,332,000
June	115,000	72,200	94,850	2,845,500	5,644,000
July	114,000	52,400	96,380	2,987,900	5,926,000
August	61,900	23,100	37,640	1,166,900	2,315,000
September	43,300	13,100	23,180	695,500	1,380,000
Water year 1907	115,000	6,800	35,870	13,091,250	25,970,000
October 1907	18,800	10,100	13,610	421,900	836,800
November	16,300	8,800	10,790	323,700	642,000
December	8,800	5,800	7,452	231,000	458,200
Calendar year 1907	115,000	5,800	‡35,190	12,845,700	25,480,000
January 1908	7,400	5,600	6,319	195,900	388,600
February	45,000	6,300	14,220	412,300	817,800
March	33,000	10,100	16,050	497,600	987,000
April	35,000	12,900	17,780	533,400	1,058,000
May	33,700	23,000	27,150	841,800	1,670,000
June	61,700	30,000	42,870	1,286,000	2,551,000
July	53,800	18,900	32,630	1,011,600	2,006,000
August	36,100	18,600	24,310	753,700	1,495,000
September	19,300	7,000	11,380	341,500	677,000
Water year 1908	61,700	5,600	18,720	6,850,200	13,590,000

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1908	20,600	6,600	9,510	294,800	584,700
November	10,200	6,000	8,093	242,800	481,600
December	72,500	6,000	15,870	492,000	975,900
Calendar year 1908	72,500	5,600	18,860	6,903,200	13,690,000
January 1909	31,500	5,800	10,010	310,400	615,700
February	25,100	11,400	13,910	389,600	772,800
March	35,900	11,100	15,860	491,600	975,100
April	46,800	20,300	30,330	910,000	1,805,000
May	73,900	32,400	54,070	1,676,200	3,325,000
June	150,000	75,100	104,900	3,146,200	6,240,000
July	134,000	34,400	79,640	2,468,800	4,897,000
August	54,100	25,000	40,800	1,264,700	2,508,000
September	93,200	21,300	48,540	1,456,300	2,889,000
Water year 1909	150,000	5,800	36,010	13,143,400	26,070,000
October 1909	20,700	11,000	14,000	434,000	860,800
November	10,900	8,300	9,443	283,300	561,900
December	11,900	4,100	8,410	260,700	517,100
Calendar year 1909	150,000	4,100	‡35,870	13,091,800	25,970,000
January 1910	67,500	4,600	18,850	584,200	1,159,000
February	10,800	8,100	9,157	256,400	508,600
March	40,200	7,700	24,370	755,600	1,499,000
April	38,900	22,500	28,740	862,100	1,710,000
May	70,300	40,900	56,470	1,750,700	3,472,000
June	69,400	26,500	47,020	1,410,700	2,798,000
July	25,200	6,900	14,710	456,000	904,500
August	13,200	6,300	9,619	298,200	591,500
September	11,300	4,600	6,167	185,000	366,900
Water year 1910	70,300	4,100	20,650	7,536,900	14,950,000
October 1910	13,500	4,300	6,984	216,500	429,400
November	9,500	6,300	7,847	235,400	466,900
December	8,200	5,600	6,939	215,100	426,600
Calendar year 1910	70,300	4,300	‡19,800	7,225,900	14,330,000
January 1911	18,700	3,700	8,806	273,000	541,500
February	25,700	7,000	13,370	374,400	742,600
March	34,500	6,100	17,360	538,300	1,068,000
April	25,900	15,600	20,400	611,900	1,214,000
May	64,200	27,000	44,970	1,394,000	2,765,000
June	78,300	50,300	64,170	1,925,200	3,819,000
July	69,000	37,800	50,150	1,554,600	3,084,000
August	46,500	10,000	18,410	570,700	1,132,000
September	13,300	6,300	8,913	267,400	530,400
Water year 1911	78,300	3,700	22,400	8,176,500	16,220,000
October 1911	60,200	7,800	28,570	885,700	1,757,000
November	19,200	9,300	12,140	364,200	722,400
December	10,100	5,500	7,565	234,500	465,100
Calendar year 1911	78,300	3,700	24,640	8,993,900	17,840,000
January 1912	8,200	3,400	5,387	167,000	331,200
February	8,800	6,500	7,366	213,600	423,700
March	24,800	7,000	13,300	412,400	818,000
April	34,700	13,700	21,070	632,000	1,254,000
May	76,500	15,400	40,800	1,264,700	2,508,000
June	144,000	57,100	107,500	3,225,300	6,397,000
July	65,200	33,400	46,630	1,445,600	2,867,000
August	42,000	11,900	22,710	704,100	1,397,000
September	15,000	7,500	9,780	293,400	582,000
Water year 1912	144,000	3,400	26,890	9,842,500	19,520,000
October 1912	20,700	‡8,800	11,010	341,200	676,800
November	18,500	8,500	11,750	352,500	699,200
December	8,300	5,200	6,561	203,400	403,400
Calendar year 1912	144,000	3,400	25,290	9,255,200	18,360,000
January 1913	6,700	2,600	3,865	119,800	237,600
February	7,500	5,300	6,071	170,000	337,200
March	11,800	7,700	9,071	281,200	557,800
April	40,500	9,300	25,610	768,200	1,524,000
May	49,700	a27,800	a38,700	1,199,800	a2,380,000
June	62,500	32,000	47,510	1,425,400	2,827,000
July	32,000	12,700	21,190	656,900	1,303,000
August	16,700	5,000	9,426	292,200	579,600
September	18,800	4,400	8,820	264,600	524,800
Water year 1913	62,500	2,600	16,640	6,075,200	12,050,000

a Revised on basis of correct discharge of 37,300 second-feet May 1.

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1913	25,000	7,200	10,330	320,100	b634,900
November	10,500	5,800	7,930	237,900	471,900
December	8,400	4,500	6,390	198,100	392,900
Calendar year 1913	62,500	2,600	a16,260	5,934,200	a11,770,000
January 1914	21,500	c2,700	c7,303	226,400	c449,100
February	27,000	5,800	11,620	325,500	645,600
March	27,000	11,200	15,010	465,300	922,900
April	34,600	12,000	22,930	687,800	1,364,000
May	89,500	33,200	53,790	1,667,600	3,308,000
June	137,000	89,300	110,500	3,314,800	6,575,000
July	89,000	33,800	51,520	1,597,200	3,168,000
August	47,000	10,600	21,950	680,400	1,350,000
September	19,800	5,600	9,933	298,000	591,100
Water year 1914	137,000	c2,700	c27,450	10,019,100	c19,870,000
October 1914	30,300	6,700	13,660	423,400	839,800
November	13,500	6,600	10,270	308,000	610,900
December	49,200	5,800	13,310	412,500	818,200
Calendar year 1914	137,000	2,700	28,510	10,406,900	20,640,000
January 1915	30,000	5,700	9,168	284,200	563,700
February	90,000	14,800	27,090	758,600	1,505,000
March	21,800	11,400	15,460	479,400	950,900
April	47,500	21,500	30,060	901,800	1,789,000
May	66,200	28,600	47,830	1,482,800	2,941,000
June	57,900	39,900	48,600	1,457,900	2,892,000
July	57,300	15,000	30,840	956,000	1,896,000
August	35,200	4,700	11,150	345,500	685,300
September	12,500	2,700	4,537	136,100	270,000
Water year 1915	90,000	2,700	21,770	7,945,700	15,760,000
October 1915	10,200	3,500	7,190	222,900	442,100
November	7,900	4,000	5,980	179,400	355,800
December	7,000	4,800	5,758	178,500	354,000
Calendar year 1915	90,000	2,700	20,230	7,382,400	14,640,000
January 1916	240,000	3,800	45,760	1,418,500	2,814,000
February	113,000	18,300	28,420	824,200	1,635,000
March	68,400	20,000	35,800	1,109,900	2,201,000
April	59,000	27,500	35,610	1,068,300	2,119,000
May	74,800	40,300	54,690	1,695,400	3,363,000
June	72,200	44,300	59,470	1,784,200	3,539,000
July	65,600	20,400	36,730	1,138,600	2,258,000
August	37,300	14,800	27,240	844,400	1,675,000
September	27,000	8,300	12,370	371,100	736,100
Water year 1916	240,000	3,500	29,600	10,835,200	21,490,000
October 1916	68,500	6,300	26,600	824,700	1,636,000
November	16,800	7,800	11,880	356,500	707,100
December	9,500	5,100	7,390	229,100	454,400
Calendar year 1916	240,000	3,800	31,870	11,664,900	23,140,000
January 1917	20,800	5,300	9,139	283,300	561,900
February	13,500	6,400	7,929	222,000	440,300
March	15,100	6,800	9,800	303,800	602,600
April	69,900	8,600	26,300	789,000	1,565,000
May	85,500	32,700	49,270	1,527,500	3,030,000
June	134,000	68,600	89,910	2,697,400	5,350,000
July	143,000	34,800	93,930	2,911,700	5,775,000
August	43,500	11,500	23,460	727,200	1,442,000
September	12,200	6,700	9,007	270,200	535,900
Water year 1917	143,000	5,100	30,530	11,142,400	22,100,000
October 1917	8,700	5,600	7,568	234,600	465,300
November	8,200	5,900	7,097	212,900	422,300
December	7,700	6,000	6,826	211,600	419,700
Calendar year 1917	143,000	5,300	28,470	10,391,200	20,610,000
January 1918	7,700	4,700	6,594	204,400	405,400
February	7,000	4,900	5,811	162,700	322,700
March	49,300	6,700	16,400	508,300	1,008,000
April	17,800	9,400	12,880	386,500	766,600
May	48,800	11,100	29,060	900,800	1,787,000
June	92,200	39,300	61,760	1,852,700	3,675,000
July	94,300	16,400	43,260	1,341,000	2,660,000
August	19,600	7,000	11,550	358,100	710,300
September	14,000	4,100	6,827	204,800	406,200
Water year 1918	94,300	4,100	18,020	6,578,400	13,050,000

a Revised on basis of correct discharge of 37,300 second-feet May 1.
b Revised on basis of correct discharge of 9,800 second-feet Oct. 20.
c Revised; does not include water diverted at Laguna Dam Jan. 2-13 included in previously published figures as follows: Jan. 2, 400 sec.-ft., Jan. 3-9, 600 sec.-ft., and Jan. 10-13, 500 sec.-ft.

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1918	14,000	5,800	7,703	238,800	473,700
November	9,200	7,300	8,053	241,600	479,200
December	8,400	6,700	7,342	227,600	451,400
Calendar year 1918	94,300	4,100	18,160	6,627,300	13,150,000
January 1919	6,200	1,800	3,761	116,600	231,300
February	8,900	4,700	7,168	200,700	398,100
March	24,100	5,600	8,835	273,900	543,300
April	29,000	14,600	20,580	617,300	1,224,000
May	50,700	28,600	36,120	1,119,800	2,221,000
June	57,600	20,600	34,340	1,030,300	2,044,000
July	35,600	12,000	20,210	626,500	1,243,000
August	20,500	4,300	10,690	331,300	657,100
September	8,800	2,300	5,157	154,700	306,800
Water year 1919	57,600	1,800	14,190	5,179,100	10,270,000
October 1919	7,300	3,700	5,287	163,900	325,100
November	82,600	5,800	10,180	305,300	605,600
December	46,100	5,600	15,360	476,200	944,500
Calendar year 1919	82,600	1,800	14,840	5,416,500	10,740,000
January 1920	32,500	6,800	11,410	353,700	701,600
February	165,000	9,000	38,040	1,103,300	2,188,000
March	53,700	10,100	18,100	561,100	1,113,000
April	34,000	12,900	20,360	610,800	1,212,000
May	81,100	15,800	46,220	1,432,800	2,842,000
June	190,000	73,800	129,200	3,877,200	7,690,000
July	73,000	19,300	43,050	1,334,500	2,647,000
August	23,200	12,600	17,560	544,500	1,080,000
September	13,300	5,300	8,427	252,800	501,400
Water year 1920	190,000	3,700	30,100	11,016,100	21,850,000
October 1920	8,000	5,800	6,503	201,600	399,900
November	12,600	8,000	10,410	312,300	619,400
December	9,000	5,100	7,352	227,900	452,000
Calendar year 1920	190,000	5,100	29,540	10,812,500	21,450,000
January 1921	8,600	5,200	6,945	215,300	427,000
February	11,000	6,000	7,364	206,200	409,000
March	21,000	7,100	13,410	415,700	824,500
April	16,700	10,500	13,680	410,500	814,200
May	68,000	17,500	43,430	1,346,200	2,670,000
June	186,000	61,400	111,100	3,331,900	6,609,000
July	106,000	28,200	45,800	1,419,700	2,816,000
August	61,300	17,500	35,170	1,090,200	2,162,000
September	37,500	7,900	17,960	538,800	1,069,000
Water year 1921	186,000	5,100	26,620	9,716,300	19,270,000
October 1921	17,300	6,300	8,968	278,000	551,400
November	9,000	6,600	7,527	225,800	447,900
December	25,500	5,900	10,350	320,700	636,100
Calendar year 1921	186,000	5,200	26,850	9,799,000	19,440,000
January 1922	46,800	4,200	13,010	403,400	800,100
February	17,600	4,500	10,770	301,600	598,200
March	35,000	7,200	16,220	502,800	997,300
April	30,500	13,300	19,120	573,600	1,138,000
May	76,000	32,300	55,890	1,732,700	3,437,000
June	115,000	74,000	97,750	2,932,400	5,816,000
July	74,500	10,500	31,640	980,700	1,945,000
August	17,800	8,000	12,070	374,100	742,000
September	16,700	4,500	8,813	264,400	524,400
Water year 1922	115,000	4,200	24,360	8,890,200	17,630,000
October 1922	4,800	3,300	3,902	120,950	239,900
November	6,400	4,500	5,483	164,500	326,300
December	9,900	6,100	7,405	229,550	455,300
Calendar year 1922	115,000	3,300	23,510	8,580,700	17,020,000
January 1923	5,900	4,600	5,326	165,100	327,500
February	6,900	5,100	5,784	161,950	321,200
March	14,500	6,100	8,782	272,240	540,000
April	30,200	5,600	18,110	543,200	1,077,000
May	69,600	20,700	46,750	1,449,400	2,875,000
June	100,000	68,000	85,210	2,556,400	5,071,000
July	63,100	26,000	42,560	1,319,500	2,617,000
August	34,200	17,000	24,630	763,400	1,514,000
September	‡57,700	10,000	21,390	641,800	1,273,000
Water year 1923	100,000	3,300	22,980	8,387,990	16,640,000

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1923	18,500	9,270	12,000	371,900	737,700
November	31,900	9,130	13,860	415,830	824,800
December	53,900	6,080	10,810	334,970	664,400
Calendar year 1923	100,000	4,600	24,650	8,995,690	17,840,000
January 1924	50,400	5,760	12,410	384,840	763,300
February	11,800	5,790	8,098	234,830	465,800
March	10,700	6,200	8,091	250,830	497,500
April	44,000	6,110	22,290	668,760	1,326,000
May	60,700	20,900	41,610	1,289,900	2,558,000
June	65,300	40,400	53,570	1,607,000	3,187,000
July	37,200	7,520	18,140	562,490	1,116,000
August	8,380	2,390	4,640	143,850	285,300
September	9,660	1,200	3,111	93,330	185,100
Water year 1924	65,300	1,200	17,370	6,358,530	12,610,000
October 1924	5,620	2,210	3,901	120,930	239,900
November	7,150	5,170	6,182	185,460	367,900
December	7,680	4,520	5,767	178,770	354,600
Calendar year 1924	65,300	1,200	15,630	5,720,990	11,350,000
January 1925	5,120	1,210	3,444	d106,750	211,700
February	8,770	4,300	6,292	d176,170	349,400
March	15,500	6,390	8,633	267,630	530,800
April	32,300	6,620	18,360	550,790	1,092,000
May	45,400	18,000	28,950	897,400	1,780,000
June	52,900	31,600	41,980	1,259,500	2,498,000
July	47,500	14,000	28,330	878,200	1,742,000
August	17,300	7,720	10,560	327,180	649,000
September	31,800	12,500	21,090	632,800	1,255,000
Water year 1925	52,900	1,210	15,290	5,581,580	11,070,000
October 1925	28,400	13,200	18,640	577,800	1,146,000
November	14,000	9,460	11,370	341,210	676,800
December	9,660	5,490	7,709	238,970	474,000
Calendar year 1925	52,900	1,210	17,140	6,254,400	12,400,000
January 1926	7,110	4,420	5,795	179,640	356,300
February	6,590	4,310	5,185	145,190	288,000
March	13,700	4,440	7,261	225,080	446,400
April	40,400	11,500	23,640	709,100	1,406,000
May	57,800	31,800	45,150	1,399,600	2,776,000
June	73,100	30,400	59,840	1,795,100	3,561,000
July	31,800	11,700	23,050	714,600	1,417,000
August	13,900	4,650	8,728	270,560	536,600
September	8,250	2,440	4,370	131,110	260,100
Water year 1926	73,100	2,440	18,430	6,727,960	13,340,000
October 1926	22,600	4,610	7,125	220,870	438,100
November	5,480	3,420	4,280	128,410	254,700
December	11,600	3,880	7,469	231,550	459,300
Calendar year 1926	73,100	2,440	16,850	6,150,810	12,200,000
January 1927	6,900	2,620	4,559	141,320	280,300
February	81,200	3,920	19,500	545,860	1,083,000
March	16,000	6,930	11,830	366,710	727,400
April	25,100	6,720	16,110	483,370	958,800
May	73,200	18,400	48,590	1,506,300	2,988,000
June	74,100	44,600	58,000	1,740,100	3,451,000
July	77,200	16,000	43,430	1,346,200	2,670,000
August	23,700	8,380	14,850	460,290	913,000
September	72,800	7,960	30,170	905,130	1,795,000
Water year 1927	81,200	2,620	22,130	8,076,110	16,020,000
October 1927	28,200	10,600	17,040	528,200	1,048,000
November	19,900	10,300	12,500	374,900	743,600
December	10,400	3,920	7,524	233,250	462,600
Calendar year 1927	81,200	2,620	23,650	8,631,630	17,120,000
January 1928	8,340	3,890	6,420	199,010	394,700
February	11,000	5,760	7,747	224,650	445,600
March	11,300	6,760	8,930	276,830	549,100
April	22,300	7,760	13,530	405,850	805,000
May	71,900	12,800	53,130	1,646,900	3,267,000
June	98,800	36,000	64,290	1,928,700	3,826,000
July	38,800	14,900	25,500	790,600	1,568,000
August	14,300	4,440	8,756	271,430	538,400
September	8,910	2,390	4,179	125,380	248,700
Water year 1928	98,800	2,390	19,140	7,005,700	13,900,000

d No discharge measurements Jan. 24 to Feb. 9; daily discharge estimated from record of Colorado River near Topock and Yuma main canal at Laguna Dam.

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1928	17,800	2,370	6,479	200,840	398,400
November	14,300	5,820	7,460	223,800	443,900
December	6,690	2,020	4,745	147,110	291,800
Calendar year 1928	98,800	2,020	17,600	6,441,100	12,780,000
January 1929	5,440	1,360	3,683	114,160	226,400
February	7,080	3,020	4,880	136,630	271,000
March	30,600	4,060	11,090	343,720	681,800
April	38,600	9,750	24,060	721,750	1,432,000
May	73,700	22,200	44,300	1,373,300	2,724,000
June	88,900	66,900	79,340	2,380,100	4,721,000
July	64,700	18,800	33,970	1,053,000	2,089,000
August	52,400	11,300	34,400	1,066,300	2,115,000
September	42,000	11,500	24,880	746,300	1,480,000
Water year 1929	88,900	1,360	23,310	8,507,010	16,870,000
October 1929	30,200	9,750	15,220	471,850	935,900
November	9,700	6,230	7,811	234,330	464,800
December	7,220	4,440	5,870	181,960	360,900
Calendar year 1929	88,900	1,360	24,170	8,823,400	17,500,000
January 1930	5,840	2,540	3,868	119,910	237,800
February	7,520	1,770	4,585	128,370	254,600
March	13,300	5,790	7,757	240,480	477,000
April	35,300	6,300	19,700	590,910	1,172,000
May	40,200	17,800	29,580	917,000	1,819,000
June	53,600	29,600	45,810	1,374,400	2,726,000
July	36,100	10,300	17,970	557,200	1,105,000
August	47,700	12,400	23,720	735,300	1,458,000
September	11,300	3,500	7,105	213,140	422,800
Water year 1930	53,600	1,770	15,790	5,764,850	11,430,000
October 1930	8,000	3,030	6,283	194,780	386,300
November	7,000	4,590	5,547	166,420	330,100
December	5,680	2,350	3,622	112,290	222,700
Calendar year 1930	53,600	1,770	14,660	5,350,200	10,610,000
January 1931	3,680	1,720	2,753	85,330	169,200
February	16,300	3,080	6,842	191,570	380,000
March	6,260	3,460	4,515	139,970	277,600
April	10,000	3,870	5,941	178,220	353,500
May	26,400	9,320	13,910	431,220	855,300
June	26,900	12,900	20,860	625,700	1,241,000
July	12,700	1,200	6,156	190,850	378,500
August	19,400	606	4,180	129,586	257,000
September	4,650	66	1,210	36,301	72,000
Water year 1931	26,900	66	6,801	2,482,237	4,923,000
October 1931	14,500	3,340	6,563	203,450	403,500
November	8,170	3,220	4,501	135,020	267,800
December	4,590	1,220	2,856	88,530	175,600
Calendar year 1931	26,900	66	6,673	2,435,747	4,831,000
January 1932	5,170	2,520	3,515	108,970	216,100
February	52,900	2,290	17,830	517,120	1,026,000
March	17,000	8,080	12,580	389,990	773,500
April	37,200	13,100	23,910	717,200	1,423,000
May	74,700	25,200	43,150	1,337,600	2,653,000
June	89,100	47,700	61,700	1,850,900	3,671,000
July	62,000	15,400	38,740	1,200,900	2,382,000
August	16,800	4,330	10,840	335,980	666,400
September	35,500	2,580	10,290	308,660	612,200
Water year 1932	89,100	1,220	19,660	7,194,320	14,270,000
October 1932	6,930	2,710	4,050	125,550	249,000
November	5,310	4,290	4,735	142,060	281,800
December	5,410	1,590	3,966	122,940	243,800
Calendar year 1932	89,100	1,220	19,560	7,157,870	14,200,000
January 1933	4,690	1,660	2,895	89,750	178,000
February	4,400	1,590	3,332	93,310	185,100
March	8,170	3,600	6,289	194,970	386,700
April	8,130	4,250	5,881	176,420	349,900
May	35,900	5,490	14,720	456,320	905,100
June	68,600	34,600	56,960	1,708,900	3,390,000
July	57,000	7,260	22,650	702,070	1,393,000
August	8,950	2,140	4,834	149,860	297,200
September	9,560	550	3,592	107,769	213,800
Water year 1933	68,600	550	11,150	4,069,919	8,073,000

Monthly summary of discharge of Colorado River at Yuma, Ariz., 1902-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1933	10,200	2,820	5,014	155,440	308,300
November	3,440	2,140	2,837	85,120	168,800
December	5,620	2,740	3,907	121,110	240,200
Calendar year 1933	68,600	550	11,070	4,041,039	8,016,000
January 1934	4,660	2,420	3,472	107,620	213,500
February	4,620	2,910	3,545	99,270	196,900
March	4,530	2,400	3,299	102,260	202,800
April	6,740	2,170	3,413	102,390	203,100
May	22,300	6,710	13,450	416,810	826,700
June	14,600	1,440	8,144	244,320	484,600
July	1,370	32	280	8,684	17,220
August	2,540	18	165	5,102	10,120
September	4,980	28	743	22,276	44,180
Water year 1934	22,300	18	4,028	1,470,402	2,916,000
October 1934	940	33	263	8,165	16,200
November	1,550	188	674	20,223	40,110
December	3,580	1,420	2,088	64,720	128,400
Calendar year 1934	22,300	18	3,293	1,201,840	2,384,000
January 1935	5,110	1,790	3,096	95,980	190,400
February	9,860	331	2,399	67,170	133,200
March	5,940	2,340	4,300	133,310	264,400
April	4,980	3,600	4,222	126,660	251,200
May	10,600	3,110	4,790	148,500	294,500
June	14,400	10,200	12,180	365,300	724,600
July	11,000	5,660	7,685	238,230	472,500
August	6,970	5,620	6,166	191,140	379,100
September	6,560	6,690	6,123	183,700	364,400
Water year 1935	14,400	33	4,502	1,643,098	3,259,000
October 1935	6,710	5,900	6,233	193,230	383,300
November	6,930	6,150	6,595	197,850	392,400
December	6,710	2,360	3,052	94,600	187,600
Calendar year 1935	14,400	331	5,577	2,035,670	4,038,000
January 1936	2,850	2,100	2,350	72,860	144,500
February	4,190	2,100	2,951	85,590	169,800
March	6,930	3,110	5,562	172,430	342,000
April	6,710	6,040	6,327	189,800	376,500
May	7,680	4,100	5,614	174,020	345,200
June	7,170	4,020	5,741	172,230	341,600
July	7,840	6,370	6,853	212,450	421,400
August	8,500	5,110	6,168	191,220	379,300
September	5,940	4,690	5,373	161,190	319,700
Water year 1936	8,500	2,100	5,239	1,917,470	3,803,000
October 1936	4,850	3,380	4,263	132,140	262,100
November	4,400	2,720	3,375	101,240	200,800
December	3,980	2,320	2,635	81,690	162,000
Calendar year 1936	8,500	2,100	4,773	1,746,860	3,465,000
January 1937	5,210	2,040	2,880	89,280	177,100
February	22,400	2,000	6,608	185,010	367,000
March	14,600	4,280	7,355	228,020	452,300
April	6,710	5,690	6,121	183,640	364,200
May	6,560	4,310	5,524	171,240	339,600
June	6,710	4,370	5,510	165,310	327,900
July	7,240	6,010	6,729	208,590	413,700
August	8,170	6,120	6,696	207,580	411,700
September	6,780	4,820	5,784	173,520	344,200
Water year 1937	22,400	2,000	5,280	1,927,260	3,823,000
October 1937	5,620	4,560	5,049	156,510	310,400
November	4,780	3,550	4,219	126,580	251,100
December	4,340	3,330	3,839	119,020	236,100
Calendar year 1937	22,400	2,000	5,519	2,014,300	3,995,000
January 1938	4,400	3,160	3,680	114,070	226,300
February	5,410	3,520	4,126	115,520	229,100
March	20,700	4,820	7,725	239,460	475,000
April	7,920	6,260	7,155	214,650	425,800
May	8,000	4,910	6,142	190,400	377,700
June	6,440	4,820	5,705	171,150	339,500
July	8,420	5,800	6,968	216,020	428,500
August	7,760	6,040	6,936	215,020	426,500
September	6,260	5,350	5,884	176,520	350,100
Water year 1938	20,700	3,160	5,630	2,054,920	4,076,000

Yearly summary of discharge of Colorado River at Yuma, Ariz., 1902-38
(‡ Corrected)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1902	-	-	11,000	7,960,000
1903	‡15,280	11,070,000	‡15,650	11,330,000
1904	13,600	9,871,000	‡13,940	10,120,000
1905	‡26,130	18,910,000	‡27,230	19,710,000
1906	26,540	19,210,000	26,910	19,480,000
1907	35,870	25,970,000	‡35,190	25,480,000
1908	18,720	13,590,000	18,860	13,690,000
1909	36,010	26,070,000	‡35,870	25,970,000
1910	20,650	14,950,000	‡19,800	14,330,000
1911	22,400	16,220,000	24,640	17,840,000
1912	26,890	19,520,000	25,290	18,360,000
1913	16,640	12,050,000	a16,260	a11,770,000
1914	a27,450	a19,870,000	28,510	20,640,000
1915	21,770	15,760,000	20,230	14,640,000
1916	29,600	21,490,000	31,870	23,140,000
1917	30,530	22,100,000	28,470	20,610,000
1918	18,020	13,050,000	18,160	13,150,000
1919	14,190	10,270,000	14,840	10,740,000
1920	30,100	21,850,000	29,540	21,450,000
1921	26,620	19,270,000	26,850	19,440,000
1922	24,360	17,630,000	23,510	17,020,000
1923	22,980	16,640,000	24,650	17,840,000
1924	17,370	12,610,000	15,630	11,350,000
1925	15,290	11,070,000	17,140	12,400,000
1926	18,430	13,340,000	16,850	12,200,000
1927	22,130	16,020,000	23,650	17,120,000
1928	19,140	13,900,000	17,600	12,780,000
1929	23,310	16,870,000	24,170	17,500,000
1930	15,790	11,430,000	14,660	10,610,000
1931	6,801	4,923,000	6,673	4,831,000
1932	19,660	14,270,000	19,560	14,200,000
1933	11,150	8,073,000	11,070	8,016,000
1934	4,028	2,916,000	3,293	2,384,000
1935	4,502	3,259,000	5,577	4,038,000
1936	5,239	3,803,000	4,773	3.465,000
1937	5,280	3,823,000	5,519	3,995,000
1938	5,630	4,076,000	-	-

a Revised.

Yearly discharge of Colorado River past Yuma, Ariz., 1902-38
(Combined discharge of river and wasteway)

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1902	-	-	11,000	7,960,000
1903	15,280	11,070,000	15,650	11,330,000
1904	13,600	9,871,000	13,940	10,120,000
1905	26,130	18,910,000	27,230	19,710,000
1906	26,540	19,210,000	26,910	19,480,000
1907	35,870	25,970,000	35,190	25,480,000
1908	18,720	13,590,000	18,860	13,690,000
1909	36,010	26,070,000	35,870	25,970,000
1910	20,650	14,950,000	19,800	14,330,000
1911	22,400	16,220,000	24,640	17,840,000
1912	27,000	19,600,000	25,520	18,520,000
1913	17,030	12,330,000	16,650	12,050,000
1914	27,920	20,210,000	28,940	20,950,000
1915	22,040	15,960,000	20,480	14,830,000
1916	29,800	21,630,000	32,080	23,290,000
1917	30,710	22,230,000	28,630	20,720,000
1918	18,230	13,200,000	18,370	13,300,000
1919	14,390	10,410,000	15,040	10,890,000
1920	30,310	22,010,000	29,750	21,600,000
1921	26,860	19,450,000	27,100	19,620,000
1922	24,610	17,820,000	23,810	17,240,000
1923	23,350	16,910,000	25,040	18,130,000
1924	17,810	12,930,000	16,060	11,660,000
1925	15,660	11,340,000	17,510	12,670,000
1926	18,830	13,630,000	17,340	12,550,000
1927	22,960	16,620,000	24,340	17,620,000
1928	19,880	14,430,000	18,610	13,510,000
1929	24,420	17,680,000	25,330	18,340,000
1930	16,970	12,290,000	15,790	11,430,000
1931	7,980	5,777,000	7,888	5,711,000
1932	20,940	15,200,000	20,820	15,110,000
1933	12,360	8,952,000	12,300	8,907,000
1934	5,168	3,742,000	4,439	3,214,000
1935	5,844	4,230,000	6,900	4,995,000
1936	6,476	4,701,000	6,020	4,370,000
1937	6,475	4,688,000	6,708	4,856,000
1938	6,644	4,810,000	-	-

Note.- Discharge of wasteway April 1912 to March 1913, for which period there is no record, was estimated as 235,000 acre-feet for inclusion in this table.

YUMA MAIN CANAL WASTEWAY AT YUMA, ARIZ.

Location.- Waste gates on Yuma main canal, lat. 32°44'00", long. 114°37'15", in SW¼SE¼ sec. 26, T. 16 S., R. 22 E., San Bernardino meridian, 500 feet upstream from intake of Colorado River siphon on Yuma main canal, half a mile north of Yuma, and 3 miles downstream from siphon-drop power plant.

Records available.- April 1913 to September 1938.

Average discharge.- 10 years (water years, 1929-38), 1,191 second-feet.

Determination of discharge.- Records of discharge of wasteway computed from canal records upstream and downstream from waste gates, allowing for other factors involved. Date of beginning of discharge of return water at this point uncertain, but appreciable discharge probably began with completion of main canal siphon which was opened to use June 29, 1912, and discharge increased in October 1926 when operation of power plant was begun. Records prior to April 1913 could not be found.

Cooperation.- Records of monthly runoff in acre-feet, 1913-30, and daily discharge in second-feet, 1931-38, furnished by Bureau of Reclamation. Other data here presented have been computed from records furnished.

Remarks.- Yuma main canal wasteway returns to Colorado River, in SW¼ sec. 26, T. 16 S., R. 22 E., half a mile downstream from gaging station on Colorado River at Yuma, that part of the water diverted at Laguna Dam, 14 miles upstream, which is used for power but not for irrigation and thus is by-passed around the river gaging station.

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1913-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
April 1913	-	-	439	13,200	26,100
May	-	-	294	9,120	18,100
June	-	-	203	6,100	12,100
July	-	-	330	10,200	20,300
August	-	-	376	11,600	23,100
September	-	-	442	13,300	26,300
October 1913	-	-	480	14,900	29,500
November	-	-	521	15,600	31,000
December	-	-	402	12,500	24,700
January 1914	-	-	498	15,400	30,600
February	-	-	274	7,660	15,200
March	-	-	390	12,100	24,000
April	-	-	660	19,800	39,300
May	-	-	546	16,900	33,600
June	-	-	373	11,200	22,200
July	-	-	524	16,200	32,200
August	-	-	464	14,400	28,500
September	-	-	509	15,300	30,300
Water year 1914	-	-	471	171,960	341,100
October 1914	-	-	543	16,800	33,400
November	-	-	257	7,710	15,300
December	-	-	144	4,470	8,870
Calendar year 1914	-	-	433	157,940	313,500
January 1915	-	-	164	5,090	10,100
February	-	-	97.4	2,730	5,410
March	-	-	224	6,960	13,800
April	-	-	444	13,300	26,400
May	-	-	241	7,460	14,800
June	-	-	144	4,310	8,550
July	-	-	374	11,600	23,000
August	-	-	340	10,500	20,900
September	-	-	267	8,020	15,900
Water year 1915	-	-	271	98,950	196,400
October 1915	-	-	262	8,120	16,100
November	-	-	296	8,870	17,600
December	-	-	216	6,700	13,300
Calendar year 1915	-	-	257	93,660	185,900
January 1916	-	-	97.6	3,020	6,000
February	-	-	0	0	0
March	-	-	46.4	1,440	2,850
April	-	-	276	8,270	16,400
May	-	-	213	6,600	13,100
June	-	-	240	7,210	14,300
July	-	-	197	6,100	12,100
August	-	-	275	8,520	16,900
September	-	-	254	7,610	15,100
Water year 1916	-	-	198	72,460	143,800

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1915-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1916	-	-	329	10,200	20,200
November	-	-	301	9,020	17,900
December	-	-	194	6,000	11,900
Calendar year 1916	-	-	202	73,990	146,800
January 1917	-	-	111	3,430	6,800
February	-	-	268	7,510	14,900
March	-	-	288	8,920	17,700
April	-	-	170	5,090	10,100
May	-	-	105	3,260	6,460
June	-	-	190	5,700	11,300
July	-	-	107	3,300	6,550
August	-	-	92.4	2,860	5,680
September	-	-	73.3	2,200	4,360
Water year 1917	-	-	185	67,490	133,800
October 1917	-	-	244	7,560	15,000
November	-	-	90.2	2,710	5,370
December	-	-	174	5,400	10,700
Calendar year 1917	-	-	159	57,940	114,900
January 1918	-	-	81.0	2,510	4,980
February	-	-	116	3,250	6,440
March	-	-	162	5,030	9,970
April	-	-	237	7,110	14,100
May	-	-	320	9,930	19,700
June	-	-	269	8,070	16,000
July	-	-	252	7,820	15,500
August	-	-	275	8,520	16,900
September	-	-	269	8,070	16,000
Water year 1918	-	-	208	75,980	150,700
October 1918	-	-	294	9,120	18,100
November	-	-	131	3,920	7,780
December	-	-	115	3,560	7,070
Calendar year 1918	-	-	211	76,910	152,500
January 1919	-	-	179	5,550	11,000
February	-	-	211	5,900	11,700
March	-	-	140	4,340	8,600
April	-	-	222	6,660	13,200
May	-	-	224	6,960	13,800
June	-	-	222	6,660	13,200
July	-	-	146	4,540	9,000
August	-	-	244	7,560	15,000
September	-	-	271	8,120	16,100
Water year 1919	-	-	200	72,890	144,600
October 1919	-	-	288	8,920	17,700
November	-	-	197	5,900	11,700
December	-	-	168	5,190	10,300
Calendar year 1919	-	-	209	76,300	151,300
January 1920	-	-	174	5,400	10,700
February	-	-	13.9	403	800
March	-	-	236	7,310	14,500
April	-	-	319	9,580	19,000
May	-	-	322	9,980	19,800
June	-	-	239	7,160	14,200
July	-	-	114	3,520	6,990
August	-	-	325	10,100	20,000
September	-	-	180	5,400	10,700
Water year 1920	-	-	215	78,960	156,400
October 1920	-	-	218	6,760	13,400
November	-	-	218	6,550	13,000
December	-	-	111	3,430	6,800
Calendar year 1920	-	-	207	75,590	149,900
January 1921	-	-	166	5,140	10,200
February	-	-	263	7,360	14,600
March	-	-	286	8,870	17,600
April	-	-	203	6,100	12,100
May	-	-	309	9,680	19,000
June	-	-	266	7,970	15,800
July	-	-	205	6,350	12,600
August	-	-	338	10,500	20,800
September	-	-	331	9,930	19,700
Water year 1921	-	-	243	88,540	175,600

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1913-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1921	-	-	115	3,580	7,100
November	-	-	351	10,500	20,900
December	-	-	106	3,290	6,520
Calendar year 1921	-	-	244	89,170	176,900
January 1922	-	-	81.2	2,520	4,990
February	-	-	375	10,500	20,800
March	-	-	281	8,720	17,300
April	-	-	371	11,100	22,100
May	-	-	366	11,300	22,500
June	-	-	319	9,580	19,000
July	-	-	285	8,820	17,500
August	-	-	293	9,080	18,000
September	-	-	155	4,640	9,210
Water year 1922	-	-	257	93,630	185,900
October 1922	-	-	384	11,900	23,600
November	-	-	429	12,900	25,500
December	-	-	311	9,630	19,100
Calendar year 1922	-	-	303	110,690	219,600
January 1923	-	-	303	9,380	18,600
February	-	-	411	11,500	22,800
March	-	-	275	8,520	16,900
April	-	-	410	12,300	24,400
May	-	-	400	12,400	24,600
June	-	-	442	13,300	26,300
July	-	-	329	10,200	20,200
August	-	-	307	9,530	18,900
September	-	-	415	12,500	24,700
Water year 1923	-	-	367	134,060	265,600
October 1923	-	-	512	15,900	31,500
November	-	-	467	14,000	27,800
December	-	-	538	16,700	33,100
Calendar year 1923	-	-	401	146,230	289,800
January 1924	-	-	265	8,220	16,300
February	-	-	223	6,450	12,800
March	-	-	434	13,500	26,700
April	-	-	536	16,100	31,900
May	-	-	507	15,700	31,200
June	-	-	455	13,700	27,100
July	-	-	415	12,900	25,500
August	-	-	433	13,400	26,600
September	-	-	499	15,000	29,700
Water year 1924	-	-	441	161,570	320,200
October 1924	-	-	553	17,100	34,000
November	-	-	326	9,780	19,400
December	-	-	421	13,100	25,900
Calendar year 1924	-	-	423	154,950	307,100
January 1925	-	-	228	7,060	14,000
February	-	-	360	10,100	20,000
March	-	-	400	12,400	24,600
April	-	-	471	14,100	28,000
May	-	-	433	13,400	26,600
June	-	-	296	8,870	17,600
July	-	-	291	9,020	17,900
August	-	-	320	9,930	19,700
September	-	-	382	11,400	22,700
Water year 1925	-	-	373	136,260	270,400
October 1925	-	-	446	13,800	27,400
November	-	-	353	10,600	21,000
December	-	-	569	17,600	35,000
Calendar year 1925	-	-	379	138,280	274,500
January 1926	-	-	516	16,000	31,700
February	-	-	230	6,450	12,800
March	-	-	291	9,020	17,900
April	-	-	476	14,300	28,300
May	-	-	395	12,300	24,300
June	-	-	356	10,700	21,200
July	-	-	441	13,700	27,100
August	-	-	332	10,300	20,400
September	-	-	444	13,300	26,400
Water year 1926	-	-	406	148,070	293,500

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1913-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1926	-	-	839	26,000	51,600
November	-	-	845	25,400	50,300
December	-	-	659	20,400	40,500
Calendar year 1926	-	-	487	177,870	352,500
January 1927	-	-	873	27,100	53,700
February	-	-	870	24,400	48,300
March	-	-	647	20,100	39,800
April	-	-	1,042	31,300	62,000
May	-	-	1,203	37,300	74,000
June	-	-	215	6,450	12,800
July	-	-	870	27,000	53,500
August	-	-	955	29,600	58,700
September	-	-	929	27,900	55,300
Water year 1927	-	-	830	302,950	600,500
October 1927	-	-	0	0	0
November	-	-	0	0	0
December	-	-	625	19,400	38,400
Calendar year 1927	-	-	686	250,550	496,500
January 1928	-	-	1,230	38,100	75,600
February	-	-	989	28,700	56,900
March	-	-	525	16,300	32,300
April	-	-	1,069	32,100	63,600
May	-	-	976	30,200	60,000
June	-	-	857	25,700	51,000
July	-	-	828	25,700	50,900
August	-	-	841	26,100	51,700
September	-	-	902	27,100	53,700
Water year 1928	-	-	736	269,400	534,100
October 1928	-	-	1,034	32,100	63,600
November	-	-	1,390	41,700	82,700
December	-	-	1,399	43,400	86,000
Calendar year 1928	-	-	1,003	367,200	728,000
January 1929	-	-	1,218	37,800	74,900
February	-	-	1,062	29,700	59,000
March	-	-	981	30,400	60,300
April	-	-	1,262	37,900	75,100
May	-	-	1,114	34,500	68,500
June	-	-	934	28,000	55,600
July	-	-	925	28,900	56,900
August	-	-	1,016	31,500	62,500
September	-	-	1,121	33,600	66,700
Water year 1929	-	-	1,122	409,500	811,800
October 1929	-	-	1,360	42,100	83,600
November	-	-	1,454	43,600	86,500
December	-	-	1,490	46,200	91,600
Calendar year 1929	-	-	1,162	424,200	841,200
January 1930	-	-	1,117	34,600	68,700
February	-	-	967	27,100	53,700
March	-	-	1,083	33,600	66,600
April	-	-	1,230	36,900	73,200
May	-	-	1,259	39,000	77,400
June	-	-	1,042	31,300	62,000
July	-	-	1,015	31,500	62,400
August	-	-	1,080	33,500	66,400
September	-	-	1,096	32,900	65,200
Water year 1930	-	-	1,184	432,300	857,300
October 1930	1,730	910	1,153	35,743	70,900
November	1,650	1,000	1,200	36,000	71,400
December	1,710	1,030	1,263	39,150	77,650
Calendar year 1930	-	-	1,127	411,290	815,600
January 1931	1,740	840	1,211	37,550	74,480
February	1,840	865	1,256	35,156	69,730
March	1,760	757	1,062	32,912	65,280
April	1,760	839	1,260	37,815	75,000
May	1,820	939	1,250	38,744	76,850
June	1,700	894	1,121	33,623	66,690
July	1,720	761	1,070	33,159	65,770
August	1,740	753	1,170	36,257	71,910
September	1,770	670	1,156	34,671	68,770
Water year 1931	1,840	670	1,180	430,780	854,400

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1913-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1931	1,790	1,080	1,320	40,920	81,160
November	1,760	1,160	1,354	40,610	80,550
December	1,730	958	1,358	42,090	83,480
Calendar year 1931	1,840	670	1,215	443,507	879,700
January 1932	1,770	1,210	1,435	44,480	88,220
February	1,900	1,150	1,398	40,550	80,430
March	1,780	947	1,215	37,677	74,730
April	1,770	1,050	1,298	38,930	77,220
May	1,780	975	1,253	38,837	77,030
June	1,760	834	1,148	34,454	68,340
July	1,860	931	1,231	38,171	75,710
August	1,760	819	1,211	37,553	74,490
September	1,580	772	1,150	34,487	68,400
Water year 1932	1,900	772	1,281	468,759	929,800
October 1932	1,700	830	1,215	37,656	74,690
November	1,690	997	1,223	36,697	72,790
December	1,770	912	1,327	41,152	81,620
Calendar year 1932	1,900	772	1,259	460,644	913,700
January 1933	1,770	1,040	1,351	41,870	83,050
February	1,560	870	1,158	32,426	64,320
March	1,370	815	1,061	32,885	65,230
April	1,730	842	1,273	38,185	75,740
May	1,740	905	1,302	40,358	80,040
June	1,760	825	1,192	35,775	70,960
July	1,850	840	1,169	36,243	71,890
August	1,740	743	1,161	35,976	71,360
September	1,670	626	1,124	33,715	66,870
Water year 1933	1,850	626	1,214	442,935	878,600
October 1933	1,840	953	1,359	42,133	83,570
November	1,800	937	1,242	37,247	73,880
December	1,820	1,140	1,362	42,220	83,740
Calendar year 1933	1,850	626	1,230	449,030	890,600
January 1934	1,780	1,220	1,387	43,000	85,290
February	1,700	849	1,223	34,253	67,940
March	1,760	986	1,255	38,906	77,170
April	1,780	991	1,334	40,021	79,380
May	1,730	864	1,183	36,659	72,710
June	1,710	649	1,107	33,216	65,880
July	1,630	227	686	21,254	42,160
August	1,010	108	502	15,573	30,890
September	1,670	581	1,057	31,723	62,920
Water year 1934	1,840	108	1,140	416,205	825,500
October 1934	1,300	588	1,076	33,344	66,140
November	1,740	1,090	1,406	42,170	83,640
December	1,810	362	1,557	48,266	95,730
Calendar year 1934	1,810	108	1,146	418,385	829,800
January 1935	1,800	1,250	1,609	49,880	98,940
February	1,650	1,040	1,328	37,190	73,770
March	1,480	1,250	1,371	42,490	84,280
April	1,580	1,170	1,402	42,060	83,420
May	1,540	1,010	1,322	40,980	81,280
June	1,430	746	1,177	35,313	70,040
July	1,570	967	1,185	36,730	72,850
August	1,540	1,050	1,302	40,350	80,030
September	1,600	1,120	1,368	41,050	81,420
Water year 1935	1,810	362	1,342	489,823	971,500
October 1935	1,480	1,100	1,287	39,910	79,160
November	1,500	1,200	1,314	39,410	78,170
December	1,630	463	1,201	37,233	73,850
Calendar year 1935	1,800	463	1,322	482,596	957,200
January 1936	1,600	913	1,433	44,413	88,090
February	1,560	1,050	1,290	37,420	74,220
March	1,410	1,100	1,264	39,170	77,690
April	1,410	1,060	1,209	36,280	71,960
May	1,510	1,070	1,260	39,060	77,470
June	1,450	896	1,081	32,444	64,350
July	1,320	981	1,080	33,482	66,410
August	1,750	935	1,240	38,455	76,270
September	1,440	1,060	1,184	35,520	70,450
Water year 1936	1,750	463	1,237	452,797	898,100

Monthly summary of discharge of Yuma main canal wasteway at Yuma, Ariz., 1913-38--Continued

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1936	1,430	1,140	1,270	39,370	78,090
November	1,540	1,180	1,317	39,500	78,350
December	1,460	639	1,330	41,229	81,780
Calendar year 1936	1,600	639	1,247	456,343	905,100
January 1937	1,600	40	1,102	34,150	67,740
February	1,570	945	1,301	36,425	72,250
March	1,510	0	996	30,876	61,240
April	1,530	1,120	1,250	37,490	74,360
May	1,580	1,120	1,247	38,650	76,660
June	1,400	1,050	1,163	34,890	69,200
July	1,320	993	1,115	34,573	68,570
August	1,540	369	1,097	33,999	67,440
September	1,360	1,060	1,168	35,030	69,480
Water year 1937	1,600	0	1,195	436,182	865,200
October 1937	1,360	923	1,163	36,066	71,540
November	1,580	1,150	1,314	39,430	78,210
December	1,710	1,280	1,380	42,780	84,850
Calendar year 1937	1,710	0	1,190	434,359	861,500
January 1938	1,480	1,140	1,333	41,310	81,940
February	1,540	0	1,079	30,207	59,910
March	350	0	115	3,578	7,100
April	1,180	116	438	13,131	26,040
May	1,310	0	788	24,420	48,440
June	1,160	939	1,035	31,064	61,610
July	1,670	930	1,156	35,832	71,070
August	1,690	924	1,199	37,159	73,700
September	1,700	942	1,173	35,192	69,800
Water year 1938	1,710	0	1,014	370,169	734,200

Yearly discharge of Yuma main canal wasteway at Yuma, Ariz., 1914-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1914	471	341,100	433	313,500
1915	271	196,400	257	185,900
1916	198	143,800	202	146,800
1917	185	133,800	159	114,900
1918	208	150,700	211	152,500
1919	200	144,600	209	151,300
1920	215	156,400	207	149,900
1921	243	175,600	244	176,900
1922	257	185,900	303	219,600
1923	367	265,600	401	289,800
1924	441	320,200	423	307,100
1925	373	270,400	379	274,500
1926	406	293,500	487	352,500
1927	830	600,500	686	496,500
1928	736	534,100	1,003	728,000
1929	1,122	811,800	1,162	841,200
1930	1,184	857,300	1,127	815,600
1931	1,180	854,400	1,215	879,700
1932	1,281	929,800	1,259	913,700
1933	1,214	878,600	1,230	890,600
1934	1,140	825,500	1,146	829,800
1935	1,342	971,500	1,322	957,200
1936	1,237	898,100	1,247	905,100
1937	1,195	865,200	1,190	861,500
1938	1,014	734,200		

DIVERSIONS FROM COLORADO RIVER TO IMPERIAL VALLEY, CALIFORNIA-BAJA CALIFORNIA

Until inauguration of the All-American canal in 1940, Imperial canal was the only means of taking water from Colorado River for irrigation in Imperial Valley except for the diversions 1916-21 from Volcano Lake on the western edge of Colorado River delta in Mexico.

Imperial canal at headings in United States and Mexico[a/]

Location.- Heading No. 1: 350 feet upstream from the international boundary and 8 miles (revised) downstream from Yuma, Ariz.; used May 1901 to July 1904 and to some extent until July 1905. Heading No. 2: 50 feet downstream from the international boundary and 400 feet downstream from heading No. 1; used July 1904 to July 1905. Heading No. 3: an excavated channel half a mile long without gates between river and canal, 4 miles downstream from the international boundary; put in use Oct. 6, 1904, greatly enlarged by the river in 1905, and finally closed in February 1907.

Records available.- January 1903 to October 1904 (discharge measurements and gage heights) and January to December 1905 (estimated monthly discharge).
Miscellaneous discharge measurements made in 1902.

Determination of discharge.- Monthly mean discharge is average of: discharge measurements of original canal below junction with heading No. 3 Jan. 1 to Mar. 10, 1905; totals of discharge measurements made at each of the three headings Mar. 11 to June 30, 1905; and flow of Colorado River at Yuma minus discharge measurements of Colorado River below heading No. 3 July 1 to Dec. 31, 1905.

Remarks.- Records fair except those estimated for November and December 1905 which are poor. Because of continually and radically changing conditions of scour and fill numerous temporary gages were read during 1903-5, but gage heights proved to be of little use except for general indication of flow between dates of discharge measurements. During 1903-4, 43 measurements (1 to 4 each month) were made, but estimates of monthly discharge were prepared only for 1905, during which year 48 measurementa (2 to 5 each month) were made. During the period, July 1905 to November 1906, frequent miscellaneous discharge measurements and observations of no flow were made of Colorado River below heading No. 3, which deducted from discharge of Colorado River at Yuma give a fair indication of the quantity of flow passing down Imperial canal.
Diversions from Colorado River for irrigation in Imperial Valley were begun May 14, 1901. Inadvertently, excess diversion was begun in February 1905 at the open heading 4 miles downstream from the international boundary, and increased in volume until by July 1905 the greater part of the flow of Colorado River was passing down Imperial canal, through Alamo and New Rivers to Imperial Valley and Salton Sea which lie below sea level. That condition prevailed until Feb. 11, 1907, when levees were completed which turned Colorado River back into its delta.

Monthly summary of discharge of Imperial canal at headings in United States and Mexico, 1905
(* Estimated; ‡ Corrected)

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1905	-	-	945	-	58,100
February	-	-	4,090	-	227,200
March	-	-	4,700	-	289,000
April	-	-	3,925	-	233,600
May	-	-	5,455	-	335,400
June	-	-	9,630	-	573,000
July	-	-	17,960	-	‡1,105,000
August	-	-	9,905	-	609,000
September	-	-	6,140	-	365,400
October	-	-	7,625	-	468,800
November	-	-	*8,400	-	*500,000
December	-	-	*12,200	-	*750,000
Calendar year 1905	-	-	‡7,617	-	5,514,000

Note.- During January to November 1905, 305,000 acre-feet was used for irrigation in Imperial Valley, and remainder passed on to Salton Sea.

a/ Published as at International boundary, 1902, and at California-Mexico boundary line, 1903-4.

Imperial canal at Hanlon heading, at Andrade, Calif.

Location.- Imperial canal diverts water from right side of Colorado River in SW¼ sec. 25, T. 16 S., R. 21 E., at Rockwood gate, 1 mile upstream from international boundary at Andrade, Calif., and 6 miles downstream from Yuma, Ariz. Diversion into canal is also separately controlled at Hanlon heading, a set of gates on the canal about 1,000 feet upstream from the boundary. Hanlon heading has controlled this diversion since February 1907.

Records available.- January 1908 to September 1938.

Average discharge.- 13 years (water years, 1926-38), 4,288 second-feet.

Extremes.- 1926-38: Maximum daily discharge, 7,880 second-feet July 17, 1937; minimum, 35 second-feet Feb. 2, 1936.

Determination of discharge.- Usual methods of stream gaging adapted to variable conditions resulting from heavy silt load. Upper reach of canal between Rockwood gate and Hanlon heading has acted as a settling basin for silt, and hydraulic dredges have been operated frequently and sometimes continuously for long periods to maintain capacity of canal. Staff gages, located on canal below Hanlon heading, read frequently in conjunction with frequent discharge measurements. Discharge at head of canal, January 1908 to February 1910, estimated as 40 percent greater than amount sold by water company to users in Imperial Valley.

Cooperation.- Records of monthly runoff in acre-feet 1908-25 and daily discharge in second-feet 1926-38 furnished by Imperial Irrigation District. Other data computed from records furnished.

Remarks.- Records for 1926-38 are good and other records are fair except January 1908 to February 1910 which are poor. Diversions to Imperial Valley have been under full control since February 1907. Irrigated areas lie in both United States and Mexico, but principally in the United States. Owing to the topography, Imperial canal lies almost wholly in Mexico, although diverting and delivering most of its water in the United States.

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
January 1908	-	-	698	21,600	42,900
February	-	-	608	17,600	35,000
March	-	-	1,304	40,400	80,200
April	-	-	1,402	42,000	83,400
May	-	-	1,215	37,700	74,700
June	-	-	1,242	37,300	73,900
July	-	-	1,181	36,600	72,600
August	-	-	1,064	33,000	65,400
September	-	-	924	27,700	55,000
October 1908	-	-	922	28,600	56,700
November	-	-	687	20,600	40,900
December	-	-	472	14,600	29,000
Calendar year 1908	-	-	977	357,700	709,700
January 1909	-	-	790	24,500	48,600
February	-	-	1,098	30,800	61,000
March	-	-	1,282	39,700	78,800
April	-	-	1,622	48,700	96,500
May	-	-	1,203	37,300	74,000
June	-	-	1,309	39,300	77,900
July	-	-	1,374	42,600	84,500
August	-	-	1,047	32,500	64,400
September	-	-	975	29,200	58,000
Water year 1909	-	-	1,064	388,400	770,300
October 1909	-	-	1,012	31,400	62,200
November	-	-	808	24,200	48,100
December	-	-	760	23,500	46,700
Calendar year 1909	-	-	1,106	403,700	800,700
January 1910	-	-	774	24,005	47,610
February	-	-	1,015	28,428	56,390
March	-	-	1,223	37,899	75,170
April	-	-	1,521	45,627	90,500
May	-	-	1,420	44,031	87,340
June	-	-	1,537	46,104	91,440
July	-	-	1,096	33,987	67,410
August	-	-	1,352	41,927	83,160
September	-	-	1,562	46,869	92,960
Water year 1910	-	-	1,173	427,977	849,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1910	-	-	1,527	47,331	93,880
November	-	-	1,254	37,628	74,630
December	-	-	1,176	36,447	72,290
Calendar year 1910	-	-	1,288	470,280	932,800
January 1911	-	-	1,148	35,532	70,480
February	-	-	1,086	29,824	59,160
March	-	-	1,366	42,302	83,900
April	-	-	1,859	55,758	110,600
May	-	-	2,037	63,134	125,200
June	-	-	2,045	61,354	121,700
July	-	-	2,855	88,514	175,600
August	-	-	2,166	67,156	133,200
September	-	-	2,114	63,408	125,800
Water year 1911	-	-	1,722	628,385	1,246,000
October 1911	-	-	2,026	62,821	124,600
November	-	-	1,873	56,183	111,400
December	-	-	1,803	55,904	110,900
Calendar year 1911	-	-	1,868	681,890	1,353,000
January 1912	-	-	1,545	47,884	94,980
February	-	-	1,552	45,001	89,260
March	-	-	1,989	61,674	122,300
April	-	-	1,922	57,651	114,400
May	-	-	1,800	55,802	110,700
June	-	-	2,014	60,407	119,800
July	-	-	2,267	70,282	139,400
August	-	-	2,643	81,946	162,500
September	-	-	2,402	72,069	142,900
Water year 1912	-	-	1,988	727,624	1,443,000
October 1912	-	-	2,385	73,933	146,600
November	-	-	1,613	48,376	95,950
December	-	-	1,543	47,826	94,860
Calendar year 1912	-	-	1,975	722,851	1,434,000
January 1913	-	-	1,656	51,351	101,900
February	-	-	1,898	53,155	105,400
March	-	-	2,418	74,964	148,700
April	-	-	2,550	76,488	151,700
May	-	-	2,833	87,829	174,200
June	-	-	2,862	85,859	170,300
July	-	-	3,147	97,556	193,500
August	-	-	2,982	92,429	183,300
September	-	-	2,701	81,028	160,700
Water year 1913	-	-	2,386	870,794	1,727,000
October 1913	-	-	2,207	68,417	135,700
November	-	-	1,253	37,596	74,570
December	-	-	1,095	33,947	67,330
Calendar year 1913	-	-	2,303	840,619	1,667,000
January 1914	-	-	1,500	46,511	92,250
February	-	-	1,534	42,950	85,190
March	-	-	2,343	72,637	144,100
April	-	-	2,890	86,691	171,900
May	-	-	3,307	102,521	203,300
June	-	-	3,883	116,486	231,000
July	-	-	3,763	116,668	231,400
August	-	-	3,230	100,116	198,600
September	-	-	2,900	87,015	172,600
Water year 1914	-	-	2,497	911,555	1,808,000
October 1914	-	-	2,420	75,014	148,800
November	-	-	1,606	48,182	95,570
December	-	-	1,443	44,733	88,730
Calendar year 1914	-	-	2,574	939,524	1,863,000
January 1915	-	-	1,585	49,138	97,460
February	-	-	1,299	36,372	72,140
March	-	-	2,440	75,638	150,000
April	-	-	2,885	86,559	171,700
May	-	-	2,861	88,693	175,900
June	-	-	4,336	130,093	258,000
July	-	-	3,491	108,236	214,700
August	-	-	3,091	95,826	190,100
September	-	-	3,291	98,731	195,800
Water year 1915	-	-	2,568	937,215	1,859,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1915	-	-	2,709	83,985	166,600
November	-	-	1,897	56,907	112,900
December	-	-	1,750	54,259	107,600
Calendar year 1915	-	-	2,642	964,437	1,913,000
January 1916	-	-	1,588	49,228	97,640
February	-	-	2,305	66,844	132,600
March	-	-	2,586	80,159	159,000
April	-	-	4,010	120,303	238,600
May	-	-	4,287	132,901	263,600
June	-	-	4,994	149,829	297,200
July	-	-	3,053	94,635	187,700
August	-	-	3,863	119,763	237,500
September	-	-	3,517	105,503	209,300
Water year 1916	-	-	3,045	1,114,316	2,210,000
October 1916	-	-	2,878	89,216	177,000
November	-	-	2,001	60,043	119,100
December	-	-	1,622	50,269	99,710
Calendar year 1916	-	-	3,057	1,118,693	2,219,000
January 1917	-	-	1,800	55,802	110,700
February	-	-	2,277	63,768	126,500
March	-	-	2,635	81,700	162,000
April	-	-	3,438	103,138	204,600
May	-	-	3,903	120,985	240,000
June	-	-	4,529	135,868	269,500
July	-	-	4,531	140,447	278,600
August	-	-	2,372	73,527	145,800
September	-	-	4,181	125,441	248,800
Water year 1917	-	-	3,014	1,100,204	2,182,000
October 1917	-	-	3,650	113,137	224,400
November	-	-	2,296	68,891	136,600
December	-	-	1,994	61,811	122,600
Calendar year 1917	-	-	3,136	1,144,515	2,270,000
January 1918	-	-	2,227	69,044	136,900
February	-	-	2,918	81,693	162,000
March	-	-	3,413	105,804	209,900
April	-	-	4,604	138,128	274,000
May	-	-	4,893	151,679	300,900
June	-	-	4,733	141,978	281,600
July	-	-	4,354	134,983	267,700
August	-	-	4,654	144,288	286,200
September	-	-	5,071	152,140	301,800
Water year 1918	-	-	3,736	1,363,576	2,705,000
October 1918	-	-	3,843	119,146	236,300
November	-	-	2,292	68,747	136,400
December	-	-	2,041	63,272	125,500
Calendar year 1918	-	-	3,756	1,370,902	2,719,000
January 1919	-	-	2,063	63,954	126,900
February	-	-	2,270	63,567	126,100
March	-	-	3,081	95,505	189,400
April	-	-	4,159	124,780	247,500
May	-	-	4,404	136,532	270,800
June	-	-	4,772	143,162	284,000
July	-	-	5,281	163,702	324,700
August	-	-	5,487	170,109	337,400
September	-	-	4,322	129,666	257,200
Water year 1919	-	-	3.677	1,342,142	2,662,000
October 1919	-	-	3,352	103,910	206,100
November	-	-	2,505	75,147	149,100
December	-	-	2,238	69,373	137,600
Calendar year 1919	-	-	3,670	1,339,407	2,657,000
January 1920	-	-	2,386	73,966	146,700
February	-	-	2,517	72,994	144,800
March	-	-	3,285	101,845	202,000
April	-	-	4,316	129,470	256,800
May	-	-	4,715	146,176	289,900
June	-	-	4,694	140,812	279,300
July	-	-	5,488	170,126	337,400
August	-	-	5,220	161,821	321,000
September	-	-	4,339	130,178	258,200
Water year 1920	-	-	3,759	1,375,818	2,729,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1920	-	-	3,664	113,595	225,300
November	-	-	2,950	88,487	175,500
December	-	-	3,002	93,089	184,600
Calendar year 1920	-	-	3,887	1,422,529	2,822,000
January 1921	-	-	2,408	74,649	148,100
February	-	-	2,974	83,266	165,200
March	-	-	3,099	96,064	190,500
April	-	-	3,274	98,224	194,800
May	-	-	3,702	114,747	227,600
June	-	-	4,257	127,711	253,300
July	-	-	4,560	141,347	280,400
August	-	-	3,927	121,723	241,400
September	-	-	4,334	130,005	257,900
Water year 1921	-	-	3,515	1,282,877	2,545,000
October 1921	-	-	2,702	83,777	166,200
November	-	-	2,626	78,771	156,200
December	-	-	2,245	69,596	138,000
Calendar year 1921	-	-	3,342	1,219,880	2,420,000
January 1922	-	-	1,985	61,520	122,000
February	-	-	2,666	74,634	148,000
March	-	-	3,367	104,387	207,000
April	-	-	4,496	134,877	267,600
May	-	-	4,507	139,713	277,100
June	-	-	4,748	142,442	282,500
July	-	-	5,465	169,413	336,000
August	-	-	5,458	169,190	335,600
September	-	-	4,913	147,395	292,400
Water year 1922	-	-	3,769	1,375,715	2,728,000
October 1922	-	-	4,302	133,369	264,500
November	-	-	3,676	110,284	218,700
December	-	-	2,257	69,959	138,800
Calendar year 1922	-	-	3,992	1,457,183	2,890,000
January 1923	-	-	2,698	83,627	165,900
February	-	-	2,864	80,187	159,000
March	-	-	3,748	116,196	230,500
April	-	-	5,321	159,632	316,600
May	-	-	5,453	169,035	335,300
June	-	-	5,852	175,545	348,200
July	-	-	6,377	197,682	392,100
August	-	-	6,241	193,485	383,800
September	-	-	5,321	159,633	316,600
Water year 1923	-	-	4,517	1,648,634	3,270,000
October 1923	-	-	3,698	114,640	227,400
November	-	-	3,536	106,088	210,400
December	-	-	3,052	94,603	187,600
Calendar year 1923	-	-	4,522	1,650,353	3,273,000
January 1924	-	-	2,944	91,269	181,000
February	-	-	3,110	90,184	178,900
March	-	-	3,884	120,396	238,800
April	-	-	5,338	160,147	317,600
May	-	-	5,510	170,821	338,800
June	-	-	6,370	191,106	379,100
July	-	-	6,828	211,669	419,800
August	-	-	4,934	152,964	303,400
September	-	-	3,288	98,631	195,600
Water year 1924	-	-	4,378	1,602,518	3,178,000
October 1924	-	-	3,254	100,867	200,100
November	-	-	2,830	84,891	168,400
December	-	-	2,550	79,036	156,800
Calendar year 1924	-	-	4,240	1,551,981	3,078,000
January 1925	-	-	2,256	69,940	138,700
February	-	-	2,710	75,893	150,500
March	-	-	4,209	130,485	258,800
April	-	-	5,618	168,526	334,300
May	-	-	5,188	160,839	319,000
June	-	-	5,985	179,540	356,100
July	-	-	6,609	204,879	406,400
August	-	-	6,266	194,254	385,300
September	-	-	5,049	151,456	300,400
Water year 1925	-	-	4,385	1,600,605	3,175,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1925	-	-	2,975	92,235	182,900
November	-	-	2,857	85,712	170,000
December	-	-	2,540	78,735	156,200
Calendar year 1925	-	-	4,363	1,592,493	3,159,000
January 1926	3,240	2,450	2,832	87,801	174,200
February	4,220	2,760	3,436	96,221	190,900
March	5,630	3,800	4,663	144,544	286,700
April	5,620	3,970	4,730	141,893	281,400
May	5,530	4,090	4,829	149,706	296,900
June	6,330	5,400	5,848	175,453	348,000
July	6,400	5,600	5,988	185,630	368,200
August	6,240	5,080	5,641	174,862	346,800
September	5,880	2,740	4,359	130,772	259,400
Water year 1926	6,400	-	4,229	1,543,564	3,062,000
October 1926	4,600	3,430	3,904	121,014	240,000
November	3,740	3,260	3,498	104,932	208,100
December	3,600	300	1,466	45,432	90,110
Calendar year 1926	6,400	300	4,269	1,558,260	3,091,000
January 1927	3,250	1,580	2,432	75,396	149,500
February	3,530	2,000	2,780	77,849	154,400
March	4,670	2,910	3,747	116,166	230,400
April	5,840	3,750	4,997	149,912	297,300
May	6,100	4,870	5,568	172,605	342,400
June	6,200	5,270	5,827	174,801	346,700
July	6,610	5,140	5,794	179,603	356,200
August	5,900	5,050	5,454	169,074	335,400
September	5,650	4,050	4,803	144,103	285,800
Water year 1927	6,610	300	4,194	1,530,886	3,036,000
October 1927	4,880	3,010	4,091	126,822	251,500
November	3,910	2,200	3,016	90,480	179,500
December	3,750	821	2,602	80,658	160,000
Calendar year 1927	6,610	821	4,267	1,557,468	3,089,000
January 1928	3,000	1,430	2,301	71,327	141,500
February	3,750	2,330	3,017	87,482	173,500
March	6,560	3,020	4,812	149,170	295,900
April	6,700	4,910	6,028	180,855	358,700
May	5,440	3,910	4,630	143,515	284,700
June	6,770	5,290	6,165	184,936	366,800
July	7,260	3,800	6,346	196,712	390,200
August	6,850	4,000	6,251	193,773	384,300
September	6,010	3,250	4,796	143,875	285,400
Water year 1928	7,260	821	4,507	1,649,605	3,272,000
October 1928	4,880	3,410	3,963	122,838	243,600
November	3,700	2,280	3,031	90,926	180,300
December	3,450	989	2,709	83,987	166,600
Calendar year 1928	7,260	989	4,507	1,649,396	3,272,000
January 1929	3,100	2,400	2,794	86,625	171,800
February	4,180	2,630	3,280	91,853	182,200
March	6,800	3,640	5,308	164,538	326,400
April	6,700	4,270	5,476	164,293	325,900
May	5,400	4,240	5,023	155,727	308,900
June	7,300	4,620	6,187	185,003	366,900
July	7,080	5,250	6,470	200,574	397,800
August	6,660	5,200	6,089	188,773	374,400
September	5,470	3,520	4,528	135,851	269,500
Water year 1929	7,200	989	4,578	1,670,988	3,314,000
October 1929	5,020	3,410	4,412	136,764	271,300
November	4,410	2,940	3,761	112,821	223,800
December	3,750	2,800	3,313	102,693	203,700
Calendar year 1929	7,200	2,200	4,727	1,725,515	3,423,000
January 1930	3,275	1,900	2,845	88,200	174,900
February	4,850	100	3,010	84,281	167,200
March	5,020	2,150	4,074	126,307	250,500
April	5,880	4,340	5,299	158,982	315,300
May	6,320	3,200	4,903	151,985	301,500
June	6,600	4,400	5,876	176,284	349,700
July	7,080	4,460	6,368	197,412	391,600
August	6,460	4,340	5,390	167,094	331,400
September	5,700	4,040	4,956	148,687	294,900
Water year 1930	7,080	100	4,525	1,651,510	3,276,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1930	4,850	3,480	4,395	136,248	270,200
November	4,530	3,120	3,839	115,160	228,400
December	4,000	2,750	3,335	103,385	205,100
Calendar year 1930	7,080	100	4,532	1,654,025	3,281,000
January 1931	3,700	2,520	3,090	95,799	190,000
February	3,490	400	2,125	59,511	118,000
March	5,930	2,830	4,574	141,802	281,300
April	6,040	2,400	4,944	148,320	294,200
May	5,300	3,220	4,487	139,085	275,900
June	6,050	4,280	5,396	161,880	321,100
July	6,420	1,500	4,582	142,035	281,700
August	5,180	1,620	3,426	106,192	210,600
September	4,520	855	2,179	65,380	129,700
Water year 1931	6,420	400	3,876	1,414,797	2,806,000
October 1931	5,060	3,300	4,054	125,670	249,300
November	3,850	2,100	2,933	87,978	174,500
December	3,290	1,400	2,709	83,993	166,600
Calendar year 1931	6,420	400	3,720	1,357,645	2,693,000
January 1932	3,620	2,140	2,997	92,895	184,300
February	3,360	1,000	2,487	72,114	143,000
March	4,650	3,180	3,887	120,510	239,000
April	4,800	3,440	4,210	126,306	250,500
May	4,720	3,210	4,113	127,490	252,900
June	5,000	3,550	4,497	134,915	267,600
July	4,660	3,600	4,197	130,095	258,000
August	4,440	2,000	3,894	120,720	239,400
September	4,470	2,980	3,741	112,228	222,600
Water year 1932	5,060	1,000	3,647	1,334,914	2,648,000
October 1932	4,450	400	2,723	84,421	167,400
November	3,330	2,700	3,030	90,891	180,300
December	3,030	1,230	2,554	79,177	157,000
Calendar year 1932	5,000	400	3,529	1,291,762	2,562,000
January 1933	3,140	2,090	2,578	79,921	158,500
February	3,830	2,300	3,042	85,183	169,000
March	4,510	2,850	3,891	120,622	239,200
April	5,210	2,850	4,362	130,870	259,600
May	4,550	3,370	4,008	124,249	246,400
June	5,130	3,700	4,444	133,308	264,400
July	5,600	4,400	5,085	157,643	312,700
August	4,920	2,920	4,135	128,192	254,300
September	4,880	1,490	3,198	95,953	190,300
Water year 1933	5,600	400	3,590	1,310,430	2,599,000
October 1933	4,450	3,360	3,877	120,177	238,400
November	3,700	3,100	3,408	102,235	202,800
December	3,840	3,040	3,430	106,317	210,900
Calendar year 1933	5,600	1,490	3,794	1,384,670	2,746,000
January 1934	3,480	2,850	3,147	97,565	193,500
February	4,260	3,110	3,658	102,418	203,100
March	5,070	3,770	4,338	134,492	266,800
April	5,580	3,270	4,341	130,240	258,300
May	4,690	3,860	4,349	34,822	267,400
June	5,200	2,700	4,459	33,762	265,300
July	3,050	407	920	28,524	56,580
August	2,080	225	555	17,198	34,110
September	5,500	611	1,779	53,357	105,800
Water year 1934	5,580	225	3,181	1,161,107	2,303,000
October 1934	2,070	800	1,292	40,062	79,460
November	3,300	1,110	2,002	60,050	119,100
December	3,760	1,060	3,259	101,029	200,400
Calendar year 1934	5,580	225	2,832	1,033,519	2,050,000
January 1935	3,520	1,410	2,446	75,811	150,400
February	4,010	195	2,292	64,165	127,300
March	5,790	3,970	5,376	166,657	330,600
April	5,880	5,180	5,644	169,333	335,900
May	5,280	4,190	4,601	142,628	282,900
June	6,000	4,580	5,486	164,587	326,500
July	6,220	5,440	5,914	183,331	363,600
August	5,800	4,050	5,227	162,046	321,400
September	4,980	3,900	4,390	131,710	261,200
Water year 1935	6,220	195	4,004	1,461,409	2,899,000

Monthly summary of discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38--Con.

Month	Discharge in second-feet			Runoff	
	Maximum	Minimum	Mean	Second-foot-days	Acre-feet
October 1935	4,480	3,610	4,165	129,112	256,100
November	3,670	3,090	3,337	100,123	198,600
December	3,540	2,000	3,032	93,994	186,400
Calendar year 1935	6,220	195	4,338	1,583,497	3,141,000
January 1936	3,890	2,500	3,280	101,690	201,700
February	4,370	35	2,906	84,275	167,200
March	7,100	4,320	5,933	183,914	364,800
April	7,170	5,780	6,640	199,213	395,100
May	5,720	4,410	5,165	160,104	317,600
June	7,070	4,760	6,583	197,482	391,700
July	7,380	3,120	6,682	207,148	410,900
August	6,730	5,940	6,316	195,799	388,400
September	6,140	4,920	5,564	166,917	331,100
Water year 1936	7,380	35	4,972	1,819,771	3,610,000
October 1936	5,230	3,820	4,498	139,425	276,500
November	3,980	2,950	3,570	107,115	212,500
December	3,620	2,580	3,292	102,048	202,400
Calendar year 1936	7,380	35	5,041	1,845,130	3,660,000
January 1937	3,340	2,620	2,971	92,113	182,700
February	4,960	2,690	3,791	106,139	210,500
March	6,620	4,200	5,434	168,443	334,100
April	7,070	5,560	6,661	199,840	396,400
May	6,090	5,100	5,528	171,377	339,900
June	7,690	5,260	6,546	196,374	389,500
July	7,880	7,080	7,460	231,271	458,700
August	7,480	6,730	7,094	219,904	436,200
September	7,220	3,070	5,544	166,317	329 900
Water year 1937	7,880	2,580	5,206	1,900,366	3,769,000
October 1937	5,550	4,100	4,919	152,499	302,500
November	4,570	3,620	4,026	120,791	239,600
December	4,540	3,420	4,106	127,291	252,500
Calendar year 1937	7,880	2,620	5,349	1,952,359	3,872,000
January 1938	4,190	3,020	3,764	116,697	231,500
February	5,070	1,970	3,909	109,446	217,100
March	6,900	2,240	5,155	159,808	317,000
April	6,860	5,860	6,473	194,198	385,200
May	6,260	5,010	5,608	173,844	344,800
June	7,340	5,710	6,380	191,392	379,600
July	7,470	6,320	7,037	218,137	432,700
August	6,800	5,510	6,027	186,843	370,600
September	6,270	4,080	5,288	158,634	314,600
Water year 1938	7,470	1,970	5,232	1,909,580	3,788,000

Yearly discharge of Imperial canal at Hanlon heading, at Andrade, Calif., 1908-38

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1908	-	-	977	709,700
1909	1,064	770,300	1,106	800,700
1910	1,173	849,000	1,288	932,800
1911	1,722	1,246,000	1,868	1,353,000
1912	1,988	1,443,000	1,975	1,434,000
1913	2,386	1,727,000	2,303	1,667,000
1914	2,497	1,808,000	2,574	1,863,000
1915	2,568	1,859,000	2,642	1,913,000
1916	3,045	2,210,000	3,057	2,219,000
1917	3,014	2,182,000	3,136	2,270,000
1918	3,736	2,705,000	3,756	2,719,000
1919	3,677	2,662,000	3,670	2,657,000
1920	3,759	2,729,000	3,887	2,822,000
1921	3,515	2,545,000	3,342	2,420,000
1922	3,769	2,728,000	3,992	2,890,000
1923	4,517	3,270,000	4,522	3,273,000
1924	4,378	3,178,000	4,240	3,078,000
1925	4,385	3,175,000	4,363	3,159,000
1926	4,229	3,062,000	4,269	3,091,000
1927	4,194	3,036,000	4,267	3,089,000
1928	4,507	3,272,000	4,507	3,272,000
1929	4,578	3,314,000	4,727	3,423,000
1930	4,525	3,276,000	4,532	3,281,000
1931	3,876	2,806,000	3,720	2,693,000
1932	3,647	2,648,000	3,529	2,562,000
1933	3,590	2,599,000	3,794	2,746,000
1934	3,181	2,303,000	2,832	2,050,000
1935	4,004	2,899,000	4,338	3,141,000
1936	4,972	3,610,000	5,041	3,660,000
1937	5,206	3,769,000	5,349	3,872,000
1938	5,232	3,788,000		

Diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley

Location.- Changes in the delta carried more of Colorado River to Volcano Lake requiring the construction of levees beginning in 1908, continually raising the level of the lake for several years and finally filling the lake with silt when the river again turned back toward its earlier course. This condition permitted some diversions to Imperial Valley from Colorado River at Volcano Lake during 1916-21.

Records available.- August 1916 to September 1921.

Cooperation.- Records of monthly runoff in acre-feet furnished by Imperial Irrigation District; other data computed therefrom.

Remarks.- No information of methods used in determining the amount of diversions. The accompanying tables show all water diverted from Colorado River to Imperial Valley other than by the Imperial canal from 1907 to 1940.

Monthly summary of diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley, 1916-21

Month	Mean discharge in second-feet	Runoff in acre-feet	Month	Mean discharge in second-feet	Runoff in acre-feet
August 1916	282	17,310	July 1919	941	57,840
			August	284	17,440
May 1917	258	15,860			
June	443	26,340	Water year 1919	273	197,500
July	641	39,410			
August	842	51,800	Calendar year 1919	273	197,500
September	114	6,780			
			March 1920	252	15,480
Water year 1917	194	140,200	April	707	42,080
			May	812	49,900
December 1917	35	2,160	June	666	39,630
			July	1,027	63,150
Calendar year 1917	197	142,400	August	896	55,120
			September	152	9,060
January 1918	14	875			
April	147	8,750	Water year 1920	378	274,400
May	329	20,250			
June	476	28,320	Calendar year 1920	378	274,400
July	938	57,670			
August	666	40,970	March 1921	65	4,010
September	14	841	April	291	17,320
			May	476	29,270
Water year 1918	221	159,800	June	332	19,730
			July	373	22,920
Calendar year 1918	218	157,700	August	321	19,740
			September	41	2,430
April 1919	566	33,650			
May	692	42,580	Water year 1921	159	115,400
June	774	46,030			

Note.- No diversions during months not shown.

Yearly diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley, 1916-21

Year	Water year		Calendar year	
	Mean discharge in second-feet	Runoff in acre-feet	Mean discharge in second-feet	Runoff in acre-feet
1916	24	17,310	24	17,310
1917	194	140,200	197	142,400
1918	221	159,800	218	157,700
1919	273	197,500	273	197,500
1920	378	274,400	378	274,400
1921	159	115,400	159	115,400
Total diversions		905,000	-	905,000

SALTON SEA, CALIF.

Salton Sea is situated in Imperial and Riverside Counties, 125 miles northwest of the Gulf of California, from which it is separated by the delta of Colorado River. It lies below sea level in the bottom of Salton Sea Basin, an interior basin formerly known as the Colorado Desert, which includes those areas now known as Imperial and Coachella valleys.

In historic times prior to 1904, the bed of the present sea was a dry lake or playa known as Salton Sink. In addition to the occasional minor flooding of this normally dry lake bed resulting from heavier than usual precipitation within the basin, greater flooding occurred when unusually high flow in Colorado River spread over that part of its delta which drains into the basin. Flood waters of noticeable volume have been reported in Salton Sink in 1828, 1840, 1849, 1852, 1859, 1862, 1867, and 1891. In the spring and summer of 1891, exploration parties traveled by boat from Yuma, Ariz., down Colorado River, through delta overflow channels, and across Salton Sea to Salton railroad station.a/ Results of similar natural overflow into the basin observed in 1905 were obscured by the great accidental diversion of the river through Imperial canal.

Following the beginning of irrigation in Imperial Valley in 1901 by use of water diverted from Colorado River, the present Salton Sea began to form in November 1904, and a depth of water of 0.2 foot on the floor of Salton Sink was observed on Nov. 15, 1904. Greatly augmented by accidental diversion to Salton Basin of a large part of the flow of Colorado River from February 1905 to February 1907, Salton Sea rapidly increased in depth and volume until it reached its maximum in February and March 1907, after which it gradually receded until 1920. From 1920 to 1938, there has been variation in elevation of water surface through a range of about 8 feet, and annual fluctuation averaging about 1.5 feet. Since complete control of diversions from Colorado River was effected in February 1907, water reaching Salton Sea has consisted of return water from irrigation development in Imperial Valley and runoff resulting from the normally low precipitation over Salton Sea Basin. Water leaves Salton Sea only by evaporation.

Gages and references.- The benchmark set by Imperial Irrigation District, lat. 33°26'55", long. 116°02'20", in NW¼ sec. 27, T. 8 S., R. 9 E., 1 mile northeast of Figtree John Spring, and about 9 miles south of Mecca is 242.44 feet below mean sea level. Elevation of the water surface has been determined by Imperial Irrigation District by levels from this benchmark since January 1925.

1904-25: Records of the stages of Salton Sea from November 1904 to February 1906 were obtained by the New Liverpool Salt Company at their plant near the old Salton railway station. Records for March to May 1906 were obtained from a series of Government gages near the new Salton railway station. In June 1906 the Southern Pacific Company installed a gage at the railroad trestle over Salt Creek and records were obtained in that vicinity by the Southern Pacific Co., the United States Weather Bureau, and the United States Geological Survey until May 1921, when the Southern Pacific Co. installed a gage opposite Durmid railway station. In April 1921 the Imperial Irrigation District began the collection of records using gages at Mullet Island, at mouth of Alamo River, at a point opposite Salton station, and since January 1925 at the point near Figtree John Spring, on the west shore of the sea.

Drainage area of Salton Sea Basin.- 8,360 square miles.

Area of water surface of Salton Sea.- 328 square miles at elevation 240 feet below mean sea level; 266 square miles at elevation 250 feet below mean sea level.

Records available.- November 1904 to September 1938.

Extremes.- Maximum stage, 195.0 feet below mean sea level Feb. 10 to Mar. 29, 1907; minimum since 1907, 250.7 feet below mean sea level November 1924; bottom of sea is 273.5 feet below mean sea level, as determined Oct. 4, 1905, by reference to Geological Survey benchmark at old Salton railway station.

Remarks.- In 1932, basic data up to that time were reviewed and reinterpreted. Monthly elevations, in feet below mean sea level, were computed and published in Water-Supply Paper 735. As determined in 1932, all gages except those used in the vicinity of Salt Creek during the period 1906-21 are believed to have been referred correctly to sea level. Corrections to readings made on the gages in the vicinity of Salt Creek were based on inspections and leveling done during the years 1913 and 1919-23. Hydrographs for all the records have been prepared and the elevations in the following table derived from a study of the graphs and the original readings. In reconciling some of the basic data for the period 1906-21 some of the more abrupt variations in the elevation of the water surface resulting from heavy rainfall over the basin may have been partly obscured, as in the case of a probable sharp rise of a few tenths of a foot in January 1916.

a/ Sykes, Godfrey, The Colorado Delta, Am. Geog. Soc., Special Pub. 19, p. 40, 1937.

Elevation of water surface of Salton Sea, Calif., in feet below mean sea level, on or about the last day of each month, 1904-38

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1905	273.5	272.9	272.7	271.3	269.7	268.8	267.7	266.5	264.4	260.0	257.9	256.7
1906	255.2	253.7	250.7	249.6	247.8	245.2	239.5	228.3	212.2	204.4	201.5	200.7
1907	199.4	199.6	198.4	195.6	195.0	195.1	195.4	195.9	196.3	196.4	196.8	197.5
1908	197.9	198.4	198.6	198.6	198.8	199.0	199.4	199.9	200.4	200.9	201.6	202.3
1909	203.0	203.3	203.5	203.6	203.7	204.0	204.2	204.7	205.0	205.7	205.7	206.2
1910	206.8	207.3	207.6	207.6	207.8	208.0	208.3	208.8	209.4	209.9	210.6	211.2
1911	211.8	212.1	212.5	212.7	212.8	212.9	213.3	213.8	214.4	214.7	215.1	215.8
1912	216.4	216.7	216.8	216.9	216.9	217.0	217.4	217.8	218.3	218.9	219.4	220.1
1913	220.5	220.7	220.9	221.1	221.0	221.2	221.6	222.0	222.5	223.0	223.5	224.2
1914	224.5	224.9	225.2	225.3	225.3	225.4	225.5	226.0	226.5	226.7	227.4	228.3
1915	228.6	228.7	228.8	228.9	229.1	229.4	229.7	230.1	230.5	231.1	231.7	232.1
1916	232.9	233.4	233.6	233.7	233.7	233.8	233.9	234.3	234.6	235.1	236.0	236.6
1917	237.1	237.6	237.9	238.0	238.1	238.3	238.4	238.6	238.7	239.1	239.5	239.7
1918	240.1	240.4	240.8	241.1	241.4	241.7	242.0	242.4	242.8	243.1	243.4	243.8
1919	244.2	244.4	244.8	245.1	245.5	245.8	246.2	246.5	246.7	247.0	247.3	247.6
1920	247.8	247.7	247.4	247.0	246.6	246.3	246.4	246.6	247.0	247.5	248.0	248.5
1921	248.9	249.0	248.7	248.4	248.2	248.1	248.3	248.5	248.9	249.3	249.5	249.7
1922	249.7	249.5	249.3	249.1	248.9	248.8	248.7	248.7	248.8	248.9	249.1	249.4
1923	249.7	249.9	249.9	249.6	249.3	249.0	248.9	249.1	249.4	249.7	249.9	249.8
1924	249.7	249.5	249.2	248.9	248.4	248.2	248.2	248.4	248.7	249.3	249.9	250.4
1925	250.7	250.6	250.3	250.0	249.7	249.6	249.6	249.7	249.9	250.3	250.5	250.6
1926	250.3	250.0	249.5	249.2	248.8	248.6	248.5	248.6	248.8	248.9	249.1	249.3
1927	249.2	248.7	247.7	247.0	246.5	246.2	246.3	246.7	246.9	247.1	247.2	247.3
1928	247.2	247.0	246.6	246.1	245.7	245.6	245.6	245.7	246.0	246.3	246.6	246.8
1929	246.8	246.7	246.5	246.2	246.0	245.8	245.7	245.7	245.8	245.9	246.1	246.1
1930	245.9	245.6	245.2	244.7	244.4	244.2	244.1	244.2	244.4	244.5	244.7	244.9
1931	244.9	244.6	244.3	243.7	243.1	243.0	242.9	243.0	243.2	243.6	243.9	244.4
1932	244.6	244.5	244.2	243.7	243.4	243.3	243.4	243.6	243.8	244.1	244.5	244.8
1933	244.8	244.3	244.0	243.6	243.5	243.3	243.3	243.5	243.7	244.0	244.8	245.4
1934	245.1	244.9	244.6	244.3	244.0	244.1	244.4	244.8	245.1	246.0	246.5	247.4
1935	247.7	248.0	247.8	247.6	247.3	247.3	247.4	247.8	248.1	248.4	248.4	248.8
1936	249.0	248.6	248.3	247.8	247.6	247.7	247.5	247.6	247.9	248.1	248.4	248.7
1937	248.6	248.2	247.7	247.2	246.8	246.5	246.5	246.5	246.7	247.0	247.2	247.2
1938	247.1	246.8	246.9	246.5	246.5	246.1	246.0	246.2	246.3	246.5	246.6	246.5

Note.- Dry lake bed was at elevation, 273.5 feet below mean sea level; first recorded observation of water on the surface was a depth of water of 0.2 foot on Nov. 15, 1904.

EXPLANATION

- Outline of Colorado River drainage basin
- Division between upper and lower basins according to the Colorado River Compact
- Outline of other drainage basins
- •12 Point for which record of stream flow is given in this report

POINTS AT WHICH STREAM FLOW RECORDS WERE TAKEN

1. Colorado River at Hot Sulphur Springs, Colo.
2. Colorado River near Krammling, Colo.
3. Colorado River at Glenwood Springs, Colo.
4. Roaring Fork at Glanwood Springs, Colo.
5. Colorado River near Cameo, Colo.
6. Plateau Creek near Cameo, Colo.
7. Government High-line canal near Palisade, Colo.
8. Orchard Mesa canal near Palisade, Colo.
9. Price and Stub ditches near Palisade, Colo.
10. Colorado Rivar near Palisade, Colo.
11. Colorado River at Grand Junction, Colo.
12. Gunnison River at Whitewatar, Colo.
13. Gunnison River near Grand Junction, Colo.
14. Colorado River near Fruita, Colo.
15. Dolores River at Gateway, Colo.
16. Colorado River near Cisco, Utah
17. Colorado River near Moab, Utah
18. Green River at Green River, Wyo.
19. Green River near Linwood, Utah
20. Henrys Fork at Linwood, Utah
21. Green River at Flaming Gorge, near Linwood, Utah
22. Green River at Bridgeport, Utah
23. Green River near Bridgeport, Utah
24. Yampa River near Maybell, Colo.
25. Little Snake River near Lily, Colo.
26. Grean River at Jensen, Utah
27. Duchesne River at Myton, Utah
28. Uinta River at Fort Duchesne, Utah
29. Uinta River near Fort Duchesne, Utah
30. White River near Rangely, Colo.
31. Whita River near Watson, Utah
32. Price River at Woodside, Utah
33. Green River at Green River, Utah
34. Green River at Little Valley, near Green River, Utah
35. San Rafael River near Green River, Utah
36. San Juan River near Bluff, Utah
37. Colorado River at Lees Ferry, Ariz.
38. Paria River at Lees Ferry, Ariz.
39. Little Colorado River at Grand Falls, Ariz.
40. Colorado River at Bright Angel Creek, near Grand Canyon, Ariz.
41. Virgin River at Littlefield, Ariz.
42. Lake Mead at Boulder Dam, Ariz.-Nev.
43. Colorado River near Willow Beach, Ariz.
44. Colorado River at Bulls Head, near Mohave, Ariz.
45. Colorado River at Hardyville, Ariz.
46. Colorado River near Topock, Ariz.
47. Williams River at Planet, Ariz.
48. Havasu Lake near Parkar Dam, Ariz.-Calif.
49. Colorado River below Parker Dam, Ariz.-Calif.
50. Diversions from Colorado River to Colorado River Indian Reservation at Parker, Ariz.
51. Diversions from Colorado River to Palo Verde Valley, near Blythe, Calif.
52. Colorado River near Picacho, Calif.
53. Diversions from Colorado River to North Gila Valley, near Yuma, Ariz.
54. Yuma main canal at Laguna Dam, near Yuma, Ariz.
55. Gila River below Gillespie Dam, Ariz.
56. Gila River near Sentinel, Ariz.
57. Gila River at Dome (Gila City), Ariz.
58. Gila River near Dome, Ariz.
59. Gila River at Yuma, Ariz.
60. Colorado River at Yuma, Ariz.
61. Yuma main canal wasteway at Yuma, Ariz.
62. Imperial canal at Hanlon heading, at Andrada, Calif.
63-65. Imperial canal at headings in United Sitates and Mexico
    - 63. Heading No. 1
    - 64. Heading No. 2
    - 65. Heading No. 3
66. Colorado River below heading No. 3 oif Imperial canal, Baja California
67. Diversions from Colorado River at Volcano Lake, Baja California, to Imperial Valley
68. Salton Sea, Calif.

Base from Geological Survey 1:2,500,000 Scale map of United States.

GENERAL MAP OF COLORADO RIVER BASIN SHOWING LOCATIONS OF BASE STATIONS

Scale 1/2500000

Approximately 1 inch to 40 miles

25 0 25 50 75 100 125 150 175 200 Miles

1944